

Medical  
Direct  
9-15-42

# The Research Quarterly

of the

American Physical Education Association

Vol. III

MAY, 1932

No. 2

## CONTENTS

The Society of Directors of Physical Education in Colleges: Proceedings of the Thirty-Fifth Annual Meeting.	
President's Address. <i>T. Nelson Metcalf</i> .....	1
The Responsibility of a College President in a Changing Physical Education Program. <i>Henry M. Wriston</i> .....	5
Physical Education at the University of Pennsylvania—from 1904 to 1931—and the Gates' Plan. <i>Dr. R. Tait McKenzie</i> .....	19
The Gates' Plan. <i>E. L. Mercer</i> .....	27
The Function of the Football Coach in a Program of Physical Education. <i>Hugo Bezdek</i> .....	33
Intramural Relationships. <i>E. D. Mitchell</i> .....	42
Intramural Athletics in Small Colleges. <i>Dr. Edgar Fauver</i> .....	53
The Inter-Relationship of Physical Education, Intramural and Intercollegiate Athletics. <i>Dr. J. H. Nichols</i> .....	64
Round Table Discussion on the Administration of Intercollegiate Athletics. <i>W. L. Hughes and Luther Grossman</i> .....	70
Control of Ringworm Infection of the Feet. <i>Dr. W. R. Redden</i> .....	73
Guiding Principles in Teacher Training from a Public School Point of View. <i>V. S. Blanchard</i> .....	81
Guiding Principles in Teacher Training from the Viewpoint of a State Director. <i>A. W. Thompson</i> .....	93
The Training of Teachers from the Viewpoint of a School Administrator. <i>William H. Bristow</i> .....	99
The Present Status of Professional Preparation of Teachers in Physical Education. <i>C. L. Brownell</i> .....	107
Methods Used in Upgrading Medical Education. <i>Dr. F. W. Maroney</i> ..	118
Methods of Improving the Professional Preparation of Teachers. <i>James Edward Rogers</i> .....	123
Report of the Committee on High School Administrative Standards for the Department of Physical Education. <i>J. B. Nash, Chairman</i> .....	126
Report of the Committee on Curriculum Research. <i>W. R. LaPorte</i> .....	130
The New Indoor Athletic Building at Harvard University. <i>Norman W. Fradd</i> .....	142
Physical Efficiency as Measured at the University of California. <i>Frank Kleiberger</i> .....	151
A Study of the Anthropometric Measurements of College Women. <i>Mary Louise Boillin</i> .....	173

(Continued on next page)

## CONTENTS—Continued

A Study of Rhythmical Capacity and Performance in Motor Rhythm in Physical Education Majors. <i>Thomas Annett</i> .....	183
The Status of Physical Education for Girls in the State of Kansas. <i>Irma Gene Nevins</i> .....	192
An Analysis of the Respiratory Habits of Trained Swimmers. <i>T. M. Aycock, L. H. Graaff, W. W. Tuttle</i> .....	199
Administrative Problems in Required Physical Education for Men in Universities. <i>H. Harrison Clarke</i> .....	218
A Comparison of Certain Physical Developments of Freshman Athletes and Non-Athletes; an Experiment Based on Certain Anthropometric Measurements Administered at the Pennsylvania State College, 1930-31. <i>Kuhrt Wieneke</i> .....	223
Recent Studies in the Sargent Jump. <i>C. H. McCloy</i> .....	235
Personality Traits of College Majors in Physical Education. <i>C. E. Ragsdale</i> .....	243
Book Reviews .....	249

---

Copyright, 1932, by American Physical Education Association

Entered as second class matter March 22, 1930, at the Post Office at Ann Arbor, Michigan,  
under the act of March 3, 1879.

---

Published March, May, October and December  
Elmer D. Mitchell, Editor

**Box 362, Ann Arbor, Michigan**

Subscription \$3.00 per year    Single copies, \$1.00 each



# American Physical Education Association

## Officers

President, Jesse Feiring Williams, M.D., Columbia University.  
Vice-President, Mary C. Coleman, North Carolina College for Women.  
Secretary-Editor, E. D. Mitchell, University of Michigan.  
Chairman Field Service, James E. Rogers, 315 Fourth Ave., New York.

### Additional Members of Executive Committee

V. S. Blanchard, Public Schools, Detroit, Michigan.  
Marjorie Bouvé, Bouvé-Boston School of Physical Education, Boston.  
David K. Brace, Ph.D., University of Texas, Austin.  
Strong Hinman, Public Schools, Wichita, Kansas.  
Mabel Lee, University of Nebraska, Lincoln.  
William G. Moorhead, State Department of Public Instruction, Harrisburg.  
Paul R. Washke, University of Oregon, Eugene.

### Past Presidents

Dr. E. Hitchcock, 1885, 1886.  
William Blaikie, 1887, 1888.  
Dr. D. A. Sargent, 1890, 1892, 1894, 1901.  
Dr. E. M. Hartwell, 1891, 1893, 1897, 1899.  
Dr. J. W. Seaver, 1895, 1896.  
Dr. Watson L. Savage, 1903.  
Dr. Luther Halsey Gulick, 1905, 1906, 1909.  
Dr. George Meylan, 1909, 1911.  
Dr. R. Tait McKenzie, 1912-1915.  
Dr. E. H. Arnold, 1916.  
Dr. William Burdick, 1917-1919.  
Dr. Dudley B. Reed, 1920-1922.  
Carl L. Schrader, 1923-1925.  
C. W. Savage, 1926-1928.  
F. W. Maroney, M.D., 1929-1931.  
Miss Mabel Lee, 1932.

### Officers of the Eastern Society

President, Miss Marjorie Bouvé, Bouvé-Boston School of Physical Education, Boston, Mass.  
Vice-President, J. B. Nash, Ph.D., New York University.  
Sec'y-Treas., Grace Jones, Public Schools, Summit, N. J.

### Officers of Middle West District Society

President, Strong Hinman, Board of Education, Wichita, Kansas.  
Vice-President, Margaret Bell, M.D., University of Michigan, Ann Arbor.  
Secretary-Treasurer, B. E. Bayh, Public Schools, Terre Haute, Ind.

### Officers of Northwest District Society

President, Paul R. Washke, University of Oregon, Eugene.  
Vice-President, Walter F. Hansen, Superintendent of Recreation, Tacoma, Wash.  
Second Vice-President, Henry M. Foster, University of Washington, Seattle.  
Secretary-Treasurer, Clair V. Langton, D.P.H., Oregon State College, Corvallis.

### Officers of Southern District Society

President, David K. Brace, Ph.D., University of Texas, Austin.  
President-Elect, C. M. Miles, State Department of Education, Tallahassee, Fla.  
Vice-President, Caro Lane, Department of Education, Atlanta, Ga.  
Secretary, Frank J. Beier, Department of Physical Education, New Orleans, La.  
Treasurer, Christine White, North Carolina College for Women, Greensboro.

### Members of Legislative Council

The Officers and Executive Committee are also included.  
G. B. Affleck, Teacher Training Section.  
B. E. Bayh, Indiana State Society.  
C. E. Brewer, Recreation Section.  
John Brown, Jr., M.D., Y.M.C.A. Physical Directors' Society.

R. D. Brown, M.D., Illinois State Society.  
A. D. Browne, M.D., Tennessee State Society.  
C. L. Brownell, Ph.D., Research Section.  
William Burdick, M.D., Maryland State Society.  
Harry Burns, M.D., Administrative Directors' Society.  
Ellis H. Champlin, New York State Society.  
H. G. Danford, Ohio State Society.  
Grace B. Daviess, Women's Section on Athletics.  
Edgar W. Everts, Minnesota State Society.  
Clara Fedler, Indiana State Society.  
Jessie R. Garrison, Alabama State Society.  
Edith M. Gates, Y.W.C.A. Physical Directors' Society.  
Major E. V. Graves, Virginia State Society.  
Willard N. Greim, Colorado State Society.  
M. F. Haylicek, Illinois State Society.  
Margaret H'Doubler, Dancing Section.  
Thomas Hines, Men's Athletic Section.  
Mrs. Grace Clifford Howard, Maine State Society.  
Allen G. Ireland, M.D., New Jersey State Society.  
Ima James, Oklahoma State Society.  
Hiram A. Jones, Ph.D., New York State Society.  
Walter C. Kadel, Delaware State Society.  
Julius Kuhnert, Public Schools Section.  
A. S. Lamb, M.D., McGill University, Montreal, Canada.  
Clair V. Langton, D.P.H., Oregon State Society.  
Harold Lauritsen, Nebraska State Society.  
Grace Lomilino, Illinois State Society.  
Helen Manley, Missouri State Society.  
Nell Martindale, Missouri State Society.  
C. H. McCloy, Ph.D., Iowa State Society.  
J. H. McCurdy, M.D., National Collegiate Athletic Association.  
C. M. Miles, Florida State Society.  
Gertrude Moulton, M.D., National Association of Directors of Physical Education for Women in Colleges and Universities.  
Grover W. Mueller, Pennsylvania State Society.  
Jay B. Nash, Ph.D., American Academy of Physical Education.  
N. P. Neilson, Society of State Directors.  
J. H. Nichols, M.D., Ohio State Society.  
Robert Nohr, Wisconsin State Society.  
D. Oberteuffer, Ph.D., Ohio State Society.  
H. Otopalik, Iowa State Society.  
Eleanor H. Quinlan, Massachusetts State Society.  
Josephine L. Rathbone, Therapeutic Section.  
Robert C. Rice, Connecticut State Society.  
Ethel Rockwell, Michigan State Society.  
R. N. Sandlin, Texas State Society.  
C. W. Savage, College Directors' Society.  
Mazie V. Scanlan, New Jersey State Society.  
Carl P. Schott, Ph.D., West Virginia State Society.  
Carl Schrader, Massachusetts State Society.  
J. R. Sharman, Ph.D., Michigan State Society.  
L. B. Sharp, Camping Section.  
H. T. Taylor, Kentucky State Society.  
A. W. Thompson, Michigan State Society.  
Agnes R. Wayman, Women's Division, N.A.A.F.  
W. J. Wittich, Wisconsin State Society.

## List of Sustaining Members

### American Physical Education Association

Whose contributions of ten dollars have largely made possible the publication  
of the Research Quarterly

- Aldinger, A. K., M.D., Director of Health Educ., 157 E. 67th St., New York, N.Y.
- Anderson, W. G., M.D., Box 1452, Yale University Gym, New Haven, Connecticut.
- Athletic House, Ohio State University, Columbus, Ohio.
- Baylis, Louise, 176 West 87th St., New York, New York.
- Beiderhase, Josephine, 176 W. 87th St., New York, New York.
- Blanchard, V. S., Board of Education, Barlum Tower, 3rd Floor, Detroit, Mich.
- Brownell, Clifford L., Teachers College, Columbia Univ., New York, New York.
- Burdick, Dr. William, 7 E. Mulberry St., Playground Athletic League, Baltimore, Maryland.
- Burns, Harry B., M.D., Administration Bldg., Pittsburgh, Penna.
- Clark, Lydia, Dept. of Phys. Educ. for Women, Ohio State University, Columbus, O.
- Dartmouth College, Athletic Council, Hanover, New Hampshire.
- Elliott, E. S., Dept. of P. E., Columbia University, New York, New York.
- Elliott, Ruth, Dept. of Hygiene, Wellesley College, Wellesley, Mass.
- Fisher, Dr. George J., 2 Park Ave., New York, New York.
- Giaucque, Mr. C. D., Dept. of Phys. Educ., Ohio University, Athens, Ohio.
- Health Education Dept., Att'n: W. H. Andrews, Boys High School, Marcy & Putnam Aves., Brooklyn, New York.
- Hepbron, George T., 105 Nassau St., New York, New York.
- Hermann, Ernst, 6 Everett St., % Sargent School, Cambridge, Mass.
- Huff, George, Director, Dept. of Phys. Welfare, Univ. of Illinois, Urbana, Ill.
- Langton, Dr. Clair V., Dean, School of Health and Phys. Educ., Oregon State Agricultural College, Corvallis, Oregon.
- Lee, Joseph, 101 Tremont St., Boston, Mass.
- Lee, Mabel, University of Nebraska, Lincoln, Nebraska.
- Lokrantz, Sven, Medical Director, Los Angeles Schools, Los Angeles, California.
- Luehring, Mr. F. W., Swarthmore, Pennsylvania.
- Maroney, F. W., M.D., Teachers College, Columbia Univ., New York, New York.
- Martin, Mrs. Florence G., Oak Park & River Forest Twp. High School, Phys. Educ. Dept., Oak Park, Illinois.
- Marvel, Fred W., Brown University, Providence, Rhode Island.
- McCurdy, Dr. J. H., 93 Westford Ave., Springfield, Mass.
- McGill University, Dept. of Phys. Educ., 3484 University St., Montreal, Quebec, Canada.
- McKenzie, Dr. R. Tait, 33rd and Spruce Sts., University of Pennsylvania, Philadelphia, Penna.
- McKinstry, Helen, Pinewood Ave., R. F. D. No. 3, Troy, New York.
- Metcalf, T. N., Dir. of Athletics, Iowa State College, Ames, Iowa.
- Mitchell, E. D., Director, Intramural Sports Building, Ann Arbor, Michigan.
- Moulton, Gertrude E., Talcott Hall, Oberlin, Ohio.
- Mueller, Grover, 171 Wellington Road, Upper Darby, Penna.
- Norris, Dr. J. Anna, 1429 E. River Road, Minneapolis, Minn.
- Office No. 1, Harmon Gym, University of California, Berkeley, California.
- Oktavec, Frank L., College of the City of Detroit, 4841 Cass Ave., Detroit, Mich.
- Panzer College of Physical Education & Hygiene, 139 Glenwood Ave., East Orange, New Jersey.
- Perrin, Miss Ethel, American Child Health Assoc., 450-7th Ave., New York City.
- Posse-Nissen School of Phys. Educ., Att'n: Harry Nissen, 779 Beacon St., Boston, Massachusetts.
- Pratt, John Barnes, A. S. Barnes & Co., 67 W. 44th St., New York, New York.
- Prosch, Frederick, Dept. of Phys. Educ., Temple University, Philadelphia, Penna.
- Rath, Emil, 147 Berkeley Road, Indianapolis, Indiana.
- Reed, Dr. Dudley B., Dir. of Health Service, Univ. of Chicago, Chicago, Ill.
- Sanders, E. M., 9 South 10th St., Indiana, Penna.
- Savage, C. W., Oberlin College, Dept. of P. E. for Men, Oberlin, Ohio.
- Seikel, Hugo B., 38 Clark Lane, Waltham, Mass.
- Sharman, Dr. J. R., No. 4012 University High, Ann Arbor, Michigan.
- Sharpe, Dr. Albert H., 6060 Pershing Ave., St. Louis, Missouri.
- Smith, Chester A., 3031 Mt. Allister Road, Pittsburgh, Penna.
- Somers, Florence A., Sargent School of Phys. Educ., 8 Everett St., Cambridge, Massachusetts.
- Stafford, Grace M., Stratford Arms, W. Wisconsin Ave. at 14th St., Milwaukee, Wis.
- Stoneroad, Rebecca, M.D., Dir. of Phys. Educ., Adams School, R and 17th St., N.W., Washington, D. C.
- Streit, William K., Dir. of Phys. Educ., Board of Educ., Cincinnati, Ohio.
- Swain, Mr. Leslie E., Brown University, Providence, Rhode Island.
- Taylor, Mabel H., Hunter College of City of New York, Park Ave. & 68th St., New York, New York.
- Tennessee Coal, Iron, & R. R. Co., % Miss Winifred Collins, Birmingham, Ala.
- Volker, William, Main, Second & Third, Kansas City, Kansas.
- Williams, Jesse Feiring, M.D., 525 W. 120 St., New York, New York.

## President's Address

By T. NELSON METCALF

*Professor of Physical Education, Iowa State College*

I WISH to speak briefly about the function of this Society—about its opportunities and its responsibilities. This is our thirty-fifth annual convention. It has been my privilege to attend the last half of these meetings and to look over the programs, the proceedings and the lists of members for those years before I began attending.

A reading of the records of these past meetings makes one realize the enormous changes which have taken place in the field of physical education over the last thirty-five years. The personnel of our profession has changed, our training is different, our interests are different, our work is different, and our activity program has changed almost completely. Following is the picture.

Back in 1900, this Society consisted of a small group of college gymnasium directors (that was then the name). Almost all of them were doctors of medicine. On the whole it was a scholarly group, perhaps not scientific in its methods as judged by present standards, but certainly scientific for its day. They were interested primarily in physical growth and development, in the technique of physical examinations, in strength tests and in various so-called systems of gymnastics. They were not especially concerned with athletics. They were in charge of hygiene instruction and of elective or required programs of physical training—programs which were almost entirely formal in content.

By 1915, we have a larger group, now called directors of physical education—most of them department heads, or, rather, one man departments, but with a few assistant directors. They were still a rather exclusive group, insisting rigidly upon specialized professional training in the applicants for membership. Fewer had medical training, most of the newer members being trained in normal schools of physical training, or in colleges beginning to offer courses for the professional preparation of physical education teachers. The convention programs were less concerned with systems of gymnastics, and were becoming concerned about aims and objectives. I remember arguments about hygienic aims as opposed to educational aims, with, I felt, the lack of a standard terminology being largely responsible for the disagreements. There were a few radicals or visionary theorists talking a play program as opposed to the formal, but not

getting many listeners. There were quite a few with active responsibility for intercollegiate athletics, but they were not worrying greatly about their athletic problems.

Quite a different picture now in 1931. We have a membership doubled, usually several men representing each school. And the field is greatly broadened. Now almost every member is a specialist in interest or in function or in both. We are specialists in health education, in intramural athletics, in required work, in individual restricted exercise, in football, in basketball, in track, in swimming, in athletic training, in intercollegiate athletic administration. Probably the biggest group of all is that of the department heads who administer intercollegiate athletics and who may be specialists in one or two fields, but are too often grossly ignorant of other phases of the work.

As I see it, the most notable changes that have occurred in our field over these thirty-five years have been (1) the substitution of informal for formal activities, (2) the development of intramural athletics, and (3) the assuming of responsibility for intercollegiate sports. With the addition of this last function we have a new tail which in many instances seems to wag the dog. As a result we have lost much of our unity. Up to date it seems to me that this Society has not been serving the coach and the athletic director and the intramural director to the extent that it should.

As I picture it, our departments are not only in need of better integration with the institutions as a whole, but we are especially in need of integration with ourselves. By this I mean that we all need a better comprehension of the general objectives of all physical education and of our particular assignment of work in the general scheme of things, and we need a better understanding and appreciation of the work of our colleagues in our own departments. I believe that if every high school and college football coach had a full appreciation of the place of football in physical education, and of physical education in education, we should have a good start toward solving some of football's present problems.

When I hear a football coach speak disparagingly of intramural athletics, or of the minor sports, or of the required class work, I am disappointed in his failure to sense the whole physical education field. I am still more disappointed when I hear one of our old time gymnasium directors or one of our recent graduate students in physical education who has nothing but adverse destructive criticism for intercollegiate football and for the work our football coaches are doing. The same holds for the intramural director who sees nothing in the whole scheme except intramural athletics.

In general, I believe this Society has failed to grasp the whole picture of its field of work and its full responsibilities. College

physical education faces a number of problems which we as a group should help to solve. Right now there is a lot of public agitation about football—a sport which our best experts have rated at or very near the top in its all around value as a physical education activity. We are to hear more about football later this afternoon, but I want to say this about it now. It is my firm conviction that although there are plenty of rotten football situations in the country where conditions are almost intolerable, and although much of what the critics have to say about football may be true, yet we are all too prone, while listening to these criticisms, to completely overlook and forget the many fine things about the game. It is my opinion that for every rotten football situation there are probably a dozen colleges where the advantages and the benefits of varsity football clearly outweigh the disadvantages and where there is no thought of questioning football's place. Football is so valuable an activity that it is of course worth saving and protecting.

This Society should, I believe, consider as one of its important tasks a study of football—its values and its dangers. We must get away from the hysteria of the game. We must separate the game from its undesirable appendages, and we must formulate and promote administrative standards for the control of football which will protect it from the evils that may attend it. There can be no group better qualified to make an intelligent study of intercollegiate football, nor whose findings should carry more weight. One half of our members are actively engaged in either the coaching of football or in the immediate direction of it. All of us are in this work as educators. We, of all people, should be able intelligently to weigh the values of football and determine how to separate the game from its undesirable aspects.

This Society has played a most important part in the development of physical education in colleges. For years, we have returned home from these meetings stimulated to new ambitions to do our jobs better. We now face a real challenge for better integration of our work and for the solving of some very serious problems chiefly connected with intercollegiate athletics.

I have been trying to think over the ways in which this Society, through its programs and committees, can best help me in my job and all of us in all our jobs. And this is the way I would outline the functions of the Society.

Through section meetings, such as those scheduled for tomorrow, it should keep us acquainted with the best and the latest theory and practice in our specialized fields. On our program tomorrow we have section meetings on student health, on intramural athletics, on intercollegiate athletics, and on teacher training. We might well add sections on required work and on corrective work and perhaps on

the coaching of those sports which do not have their own coaches' associations.

Through the general assemblies it should do the following:

First, broaden our conception of the entire field of physical education and of its place in the whole scheme of education.

Second, inform us of the best researches in objectives, in curriculum and in method.

And third, study the more important special problems which will inevitably arise from time to time. Right now there is none more important than intercollegiate football. Our Society must do its part to purge and save and defend this valuable physical education activity.

If our committee work and our annual programs can be made up with an emphasis upon these particular ends, I believe this organization will become of greater and greater value to us as individuals and to our profession.



# The Responsibility of a College President in a Changing Physical Education Program

By HENRY M. WRISTON  
*President, Lawrence College*

I AM an amateur among professionals, and I enter this game with all the moral handicaps involved in so unequal a contest. I am reminded of an incident which occurred in a like circumstance. A learned assembly, similar to this, met at a great university. The governor of the state and the president of the university were both invited to make addresses. Each, mindful of his deficiencies in the subject matter, asked a certain professor to prepare a memorandum as the basis for his discussion. The professor, innocent of the ways of the great world, sent them identical manuscripts. Each, ignorant of the request made by the other, found it so good that it needed no emendation and took it to the function as the manuscript of an utterance calculated to dazzle the audience. The governor spoke first—so the president of the university got himself out of the hole by telling where the governor got his speech.

I wrote one of your learned brethren and asked what I should do upon this occasion. His reply, voluminous but pointed, was embroidery upon this passage, which he took for a text: "What we want, and what you do not dare to give us, is an honest-to-goodness statement of a system which you would like to see inaugurated in your college or any other college, with nothing held back. I know it is a tough place, and probably you are not to be blamed for holding back some things, but the intercollegiate problem is not going to be settled unless the college presidents have the courage of their convictions." If he had added the words "if any" to that final sentence the expression of his thought would have been complete.

In order to point the moral he enclosed a section of a letter from another of your distinguished members built about the theme that this would be a good discussion "if you can get the people present to tell the truth, an impossibility, I am discouraged."

Amazing as it may seem to these gentlemen, even the astounding phenomenon of a college president telling the truth will not bring a solution to all the ills of the physical and athletic program. And to prove that point, I will now proceed to accept the challenge of

one friend, restore the courage of another, and perform this modern miracle of truthfulness.

THE topic assigned is "The Responsibility of a College President in a Changing Physical Education Program." I begin by saying that his responsibility in this field is precisely the same as his responsibility in the changing program of education in the social or the physical sciences. He should get the best expert advice he can find; on the basis of that he should frame a program with the department, assist the department in interpreting it to the faculty, and then take the responsibility for the result before his regents or trustees and the public. The initiative ought to rest with the department. If its members are alive to changing emphases they should seek to keep the president in touch with them and make him conscious of their significance. There are many departments, and each has its own pressing problems. Only by a process of continuous education of the president can any one department expect him to take a progressive position.

Only in minor matters may the president develop general policies without faculty support, manifested either by legislative activity or a clear consensus of opinion. The program having been formulated, the president becomes the spokesman of the department and of the faculty before the governing body and the public. President Neilson of Smith spoke of the president of a college as a lightning rod. If I may expand his metaphor, the president must keep his head in the air, his feet firmly on the ground, and resist the tendency to melt under intense heat. If he melts he does not perform his function, which is to carry destructive criticism safely around the academic structure and into the ground.

If many presidents have melted in the storms about athletics, it is because the lightning is very intense. We are dealing with matter of enormous public interest. When the "world's greatest newspaper" regards the defeat of Notre Dame as worth a two-inch banner lead over its first page of a Sunday edition, it is because the editors believe that is the news the public wants first.

If interest in great questions of public policy were as keen as popular interest in sports, if the public would inform itself through the press as assiduously upon governmental issues as it does about sports, the world would have no gloomy prophets as to the future of democracy. Moreover, the writers about sports are less jaded and more militant in their convictions than any other group of news writers. The commentators upon politics have become almost philosophical in their outlook. The writings in the newspapers upon religion and education are usually quite formal and are assignments dreaded by "live wires." The sports reporter, on the other hand,



writes with zest and enthusiasm, and lays out policies for the Big Ten, or the North Central Association of Colleges and Secondary Schools, or for a university, or for a college, with a good deal of assurance. He not merely prints the news, he comments upon it with great freedom. He exercises, in short, an editorial function. His editorials, moreover, are signed, and do not suffer from the usual editorial anonymity. It is really amazing that in connection with sports there has come into the lives of the writers such a militant zeal for their subject that the expression of an opinion at variance with the accepted formula becomes a subject of active and sometimes acrid discussion.

Compromises are responses to pressure. The chemistry department may rewrite its theories indefinitely; the public knows little about it, cares less, and the president suffers no damage. But the athletic program being a matter of great public interest, the president may feel that the losses in public approval of the college or of his administration are greater than the gains to be achieved by some specific alteration of policy. It is for this reason that presidents are prone to compromise on athletic matters. I make no apology for this, however much I regret it. Presidents are not omnipotent, and when they lose the support of the trustees they are impotent. I think it could be demonstrated statistically that among the causes of the high official mortality of college presidents, finances and athletics lead the list. Greater devotion hath no officer than that he lose his office! Many have done so, only to be succeeded by others who will follow the popular will. Reform was set back thereby more than it would have been set back by some compromise. Moreover, it must be borne in mind that reform in this field is particularly difficult because a vicious relationship between sports and profits has developed through the years. If a stadium has been built (in a previous administration, let us say) and the service of the bonds is predicated upon the profits of football, it is easier for the camel to go through the eye of the needle than for that institution to take a balanced and judicious educational view of the situation. Or if, for the building of university buildings or running expenses, an institution has counted on football profits to the extent of a third of a million annually, it is very difficult to reform. To replace the profits with endowment would require an increase in endowment of \$6,000,000. While this case is an extreme one, the cold fact is that many, if not most, colleges now find themselves in a financial position where the sudden exclusion of all considerations not strictly educational would put a strain on the budget which it is not able to bear.

These are practical considerations of great importance, but I shall not dwell further upon them. Instead I will now make what

my friend called for—an “honest-to-goodness” statement of the situation as I should like to see it, and in doing so will only make suggestions which I am seeking actively to develop into college policies, if they are not already accepted practice. There is no occasion to hold anything back, but I shall refer to Lawrence College only when it is necessary to illustrate a specific point.

IN this utopian outline, the staff will have first consideration. I would have for this department men as well trained, as broadly cultured and as professionally competent, as are demanded in physics or economics or literature. Indeed, they should be more broadly and more thoroughly equipped. For they must deal with the whole man, and not with one field of learning. In this department, if anywhere, should be found the educational philosopher. Here should be that group of persons who see the ultimate objectives, whose emphasis is upon rounded development of the whole personality—mind and body—emotions and will and reflexes—all in harmony. Here will be that fine sensitiveness that is willing to lose public prestige with fortitude if a game is lost by withdrawing a player in danger of suffering injury by further exertion. Coaching members of departments of physical education have not always been famous for this quality. Of course the defense is offered that the coach's job depends upon victory. But one can offer much the same defense of the president. It is no defense at all. No man has a right to hold his job by the abuse of another. When it is done, as it often is, the hollow pretense about “character building” is revealed in all its tragic insincerity.

This should be the first department to urge high standards of scholastic attainment for intercollegiate representation. Here will be found professional insistence that no 145-pound hero can play in three sports for three years and come out with his intelligence developed to its maximum power, and his body keyed to its maximum pitch for sane living. In this department the coach simply does not exist as an independent unit. The teaching function with reference to any sport is simply a departmental assignment, precisely as in the history department one man handles ancient and medieval history, a second modern European and English history, and a third American history. This organization leaves no room for the part-time coach. No one who spends part of his time in professional football, no one who is judge, contractor, dentist, or whatever other vocation one may imagine, will be in charge. This is not intended to assault either the competence or the morals of seasonal coaches. It is based upon the conviction that only by using persons whose time and responsibility are undivided can we realize a program the whole implication of which is educational.

All this competence is to be bought for a price no greater than that of the historian, the sociologist, or the botanist. His salary is not only comparable in size, it is drawn from the same source—endowment incomes and fees. It is not derived directly or indirectly from the gate receipts of athletic events. Having secured him for the staff, I will give the man in physical education, though he coaches, the tenure of his professional fellows, and judge his work on the basis of its educational results, not upon victory or defeat, not upon advertising value or the prestige it brings to the college.

I notice by your program that there are discussions of professional training. More power to you. Speed the day when the departments themselves will revolt against paying more to a young man without graduate training who can throw a flat pass than to a doctor of philosophy or a doctor of medicine. And may I inject a remark, not strictly within my province? An embattled department and an aroused faculty, with the courageous backing of the American Association of University Professors can bring reforms even against the protests of presidents!

**I**NOW turn from the teacher to the teaching. Shall there be three programs—one of health from the medical standpoint, another of physical education, so called, and a third of athletics? In Utopia college there will be but one. One part of the department will not educate the boy into a sanitarium prescribed by another part of it, even if we fail to be Myopia University. Medical examination, diagnosis, and treatment are all part of physical education, and physical activity in athletics is either education, recreation, or exploitation. The first two are legitimate; the last should be utterly barred. Athletics should not exist apart from education or recreation.

To this department belongs the total control of schedules, and of eligibility. Schedule making and eligibility rules present two of our most absurd modern situations. Manifestly, games should be played with neighboring colleges of like size and character, where the benefits of intercollegiate contact and sportsmanlike rivalry may be obtained. Nothing else is pertinent; the question of gate receipts is distinctly impertinent.

No other phase of college education is so bedeviled with rationalizations that manifest insincerity or feebleness. One of these is to the effect that football must be exploited in order to raise money enough to support the physical education program and the minor sports. The simple fact is that either the physical education program and these other sports are intrinsically valuable for the educational objective—or they are not. If they are not, they do not need the support, and if they are, the college is under as much obligation to

support them as it is to finance any other branch of the educational program. What would we think of a college which commercialized its chemistry department, for example? It would be entirely possible to run a commercial testing laboratory with the advanced students in chemistry and physics. The routine determinations made in that sort of laboratory could readily be done by them, and at a profit to the institution. The students would not learn as much chemistry in that way, but the profits would pay for instruction in Greek, one of the expensive minor sports of the modern curriculum.

To distort and throw the whole football program out of perspective is to offset legitimate recreation with the kind of educational charlatanism which ought not to be possible in any American institution. False reasoning frequently manifests itself in schedules, particularly when small colleges play outside their own class. Sometimes it is done in the name of advertising and prestige; but it is highly doubtful if a score of sixty, or seventy, or one hundred to nothing adds to the prestige of any institution. When it is done because the institution frankly wants income for other purposes, it is heartless exploitation of exceedingly innocent young men who ought, if they are to earn money for the school, to get a share of the proceeds. Is it any wonder that they think the college owes them something, and that they have done something for the institution?

As for eligibility, why should not the department handle it? Can anything be more absurd than our conferences with their elaborate rules for eligibility, with official interpretations, and with an official, sometimes paid, to interpret the interpretations. Lawrence College is a member of two such conferences. In both the eligibility requirement is so low that it would require a student who met only the minimum regulation seven and a half years to graduate—certainly an inspiring educational thought! And why do we have them? There can be only one answer—because we do not trust the educational integrity of our alleged friends, and they do not trust ours. The rules are designed to put the rivals in leading strings so that there may be some chance of beating them.

All the fuss and bother about these meticulous eligibility rules is nonsensical. Twelve hours and twelve points in one institution do not represent the same values as twelve hours and twelve points in another. The Carnegie study of colleges in Pennsylvania demonstrated the enormous disparity among colleges with regard to internal standards. There is no gold standard of scholastic credits; to assert a parity does not create one. Therefore, the college which for one reason or another is in favor of a money-making athletic racket has only to adjust its internal standards to meet the "needs" of the team. Personally, I am perfectly ready to trust the standards of most of our natural rivals and let them frame their own eligibility

regulations. Where there is distrust there are no dividends in sportsmanship in playing the game at all. About this much abused word sportsmanship so many barnacles have clustered that the idea is all but lost. Sportsmanship involves playing hard, playing fair, and appreciating the opponent without reference to victory or defeat. Sport has been moving in precisely the opposite direction, doing everything possible to exalt victory, and stimulating fears and suspicions and bitter rivalries. One of the evidences is the elaborate system of spies and scouts. The logical result is the sort of hysteria which culminated so disgracefully this fall in the sequestration of a suspected player. I would abolish all scouting. Indeed, Lawrence College, like many another, has dropped the whole absurd and expensive performance.

Even if mechanical standards were really uniform, conference eligibility requirements are shockingly low. In any institution with educational self-respect the actual standard is higher than the requirement. One member of our faculty recently checked upon this matter and gave me the results while I was in the midst of preparing this paper. He discovered that of thirty-two men allowed to play football or basketball only one had any failures and only four had less than a point-per-hour record. In other words, we will not let a boy play unless he is headed for graduation at a normal pace.

In Utopia college we shall go further. The department will have full power in the matter of eligibility, without the intervention of policing deans, statistical registrars, or supervisory faculty committees. The department will give the boy what he needs. If intercollegiate athletics have significant physical and moral values for him, he may participate. If they have none, he will not. It seems reasonable to suppose that the boy who has played two or three years in high school, and then after the sacred freshman year (another monument to intercollegiate distrust!) plays in intercollegiate athletics another year or two may reach the point of diminishing returns, both physical and moral. This is particularly true if we may take at its face value the statement of one of the most notable among the coaches resigning this year. He is reported to have said, "I am sick and tired of driving boys, whipping them into frenzies with everything but lashes, seeing them crack from nothing but exhaustion. That's not football, the game. I'll never be a party to that again." This singularly frank testimony accords with facts familiar to every one in this room. Every one of us knows that there is absolutely no educational excuse for it. All the wretched rationalization which excuses that sort of thing by appeals to the need for body-contact games in a soft age break down in the face of this testimony. There is no doubt that there should be strenuous body-contact games, but between that statement and the



realities of big-time, high pressure football there is certainly a world of difference.

THIS brings us to the heart of the program. The only excuse for any educational institution is the development of the individual. Education in America has the appearance of mass production. We deal with human beings in statistical terms as though our calibrations measured something significant. This is all justified on the ground that it is designed to achieve a social result. But the total social result depends upon the result with each individual. Physical education, as I see it, has a threefold objective. It aims at physical well being through the cultivation of habits of constructive recreative activity, at moral well being through providing an outlet for excess youthful vitality and cultivating functionally the virtues of sportsmanship, and at intellectual well being by furnishing a sound constitution sanely to bear the stresses of modern life. No other considerations are pertinent. We have built up a whole new system of child discipline and a whole new educational ideal about the conception of the sacredness of the individual personality. Then in the name of physical education we have witnessed the most ruthless exploitation of students—for the sake of the prestige, the advertising, the profits of the college.

Physical education must not seek its objectives with a mass of men and women. It must attend to the interest of the individual—not of the few more capable, nor even the greatest number, but of every individual. In physical education, as in all other education, the most significant thing about individuals is individual difference. If, therefore, we are to deal intelligently with the subject of physical education and athletics we must make the individual and his personal needs the subject of study. It is manifest beyond any argument that as a rule this has not been done. Few subjects have been standardized as fully as gymnastics, where every movement is in unison; and gymnastics still survive in many institutions. Even sports and games have sometimes been formalized to a demoralizing degree. The amount of successful correctional work done in colleges is entirely negligible, and the amount of attention given to the especially gifted is much greater than the attention given to those in need of correctional activity.

If the twenty intellectually best students in the school were sorted out from their fellows and given the same disproportionate attention that the twenty best athletes are given by the coach and the department of physical education, there would be a shout of protest over the dangers of building an intellectual aristocracy, and over the pampering of the especially gifted. Indeed, it is one of the notable educational facts that, in general, America supplies more

energy, time, thought, attention, and money to the mediocre student than to the especially gifted student. But in the field of physical education and athletics it has been the practice to reverse that policy and spend a disproportionately large part of our time upon the physically gifted. There are many colleges so small and so poor that they cannot afford a full-time director of physical education, but there are very few who do not have a coach, even if he be part-time, and many have a part-time coach who has no other work in physical education. In other words, in many schools only the physically gifted get any attention at all!

The curriculum of the modern college is built upon the basis of individual tastes and aptitudes. A very few basic tool subjects are required. For the rest, an effort is made to see that the student learns something about several things in the first two years and much about some specific field in the last two. We offer a wide variety of electives. The purpose is to accommodate the special interests, needs, and capacities of the student body. But in the field of physical education and athletics there has been a strong tendency to restrict the choice of activities very narrowly, and to have the choice based, not so much upon the interests, tastes, capacities, and needs of the students, as upon public excitement and other factors of that character. Thus the motivating force that comes from variety is lost. Thus we tend to restrict the number of students who participate, and lay the emphasis upon a small group with a specific skill rather than upon the very much larger group with varied skills. It is perfectly obvious that many a boy who ought not to play football ought to play tennis. No one will contend that the values of tennis can be adequately exploited without some training in the execution of its plays. There is as much "form" in a drive or a lob as there is in blocking or tackling. There is, I suppose, as much value in swimming as in basketball—and again it is necessary to have instruction and training in order to get the maximum benefit. If there are benefits in competition, are we not obligated to extend those benefits to as many students as possible, and should we not multiply the forms of competition so that students with varied physical talents may participate?

**M**ANIFESTLY, we should take into account the significance of habit and utility in after life. There has been an enormous drive away from subjects whose utility in adult life is not obvious. Emphasis has been put upon teaching the students things which they can actually use. I noticed in a New York newspaper that in one institution with a strong football team, many of the members came from a school of commerce. That school was organized specifically to provide the largest possible "carry-over" of educational material

in after life. From the standpoint of "carry-over," from the standpoint of building habits of exercise which will be continued, the more highly publicized sports are the least useful. If it is complained that the boy or girl who studies Latin never reads a Latin book after graduation, it is equally true that the boy who plays football almost never again plays football after leaving school.

On the other hand, the "minor" sports are precisely the ones wherein recreative habits are established which may be maintained in after years. If this argument were carried to its logical extreme we should lay our principal emphasis upon golf. But I am not advocating going to logical extremes. I am suggesting that we have gone to illogical extremes from an educational point of view, and that we should redress the balance. We should bring to bear on this problem of building adequate habits of recreation all that we bring to bear in trying to build intellectual habits by way of variety of appeal, by recognition of special aptitudes and skills, and by laying our emphasis upon training in those things which will have a direct carry-over into after life.

At Lawrence College, we have three hundred and ninety boys in the four classes. For those boys, in addition to football, basketball, and track, we maintain teams, when they can find competition, in swimming, cross-country, wrestling, tennis, and golf; and to those intercollegiate sports we have added intramural fencing, hockey, volleyball, baseball, handball, boxing, and squash. It is altogether likely that the development of a program as varied and diverse as that, and the maintenance of so many intercollegiate branches with relatively so small a number of boys, has lowered our percentage of victories in football and basketball. If, however, we look at the matter from the point of view of the benefit to the individual student, and from the point of view of individual differences, and from the point of view of the enthusiasms that come from variety, and the values which come from habit formation, the gains are infinitely greater than the losses.

It is a fair question, of course, whether such a program is ruinously expensive. The answer is that it depends upon whether one is ready to sacrifice something of the perfection of the finish upon the teams which attract public attention in order that the staff may have time to devote to the other activities. Of course, if there is no limit to the amount of money one can spend, one can put a high polish upon all the activities. But so far as educational benefits are concerned there is no reason for spending more upon one type of activity than upon another, proportional to the number who participate in that activity.



THE physical education program in a college ought to be subordinated to the principal purpose of the institution. That principal purpose is to develop intellectual skills. If the purpose were to develop physical skills the institution would be of an entirely different sort. That is not to detract from physical education. The same is true of social education; there is no sneer more damning than to call a college a country club.

It is manifest that the refinements of physical skill, achieved by some of our over-coached athletes, do not compensate for the deficiencies in intellectual skill involved in the engrossment of time and attention by athletics. If his subsequent livelihood is to come from physical skills, rather than intellectual, he should not have come to college.

Is there evidence that athletics do detract from intellectual skills? In Wisconsin data are available upon the basis of which one can form some estimate of the intellectual costs of refined physical skills. When a student graduates from high school we have two measures of his achievement and his capacity, his high school record, and his intelligence rating by a state wide test. If one will develop the matter statistically, he can determine whether the athletes as a group win high school grades which their intelligence indicates they should win. Just for experimental purposes we worked that out so far as the persons who entered Lawrence College during the last three years were concerned. We took the intelligence scores of the class and the high school averages and compared the athletes with the entire class. This was a legitimate procedure, inasmuch as the boy who was ineligible for high school athletics was also below the standard for college admission. The results showed that so far as intelligence was concerned the athletes were somewhat better than the average of the class; fifty-six per cent of all athletes were in the upper half. This is effective demonstration that their skills were not peculiarly physical, that their intellectual capacities were more than equal to the intellectual capacities of the other students. On the other hand, when their high school grades were studied it was found that their averages were below the averages of the entire class, there being a considerable margin in some cases. Thus we were led to the inescapable conclusion that concentration upon athletic activities had in a large number of cases (enough to affect the total result markedly) led the athlete to do poorer scholastic work than his intelligence warranted.

Then we applied the same test to students in college. In this case the term "athlete" had a broader meaning, because we maintain several sports, so that a large percentage of the men academically eligible for intercollegiate competition actually participate. We made a further departure from the earlier study by comparing the athletes

not with the whole class but with the non-athletes. On these bases it developed that the intelligence ratings of the "athletes" were slightly lower than those of the non-athletes. During the freshman year of ineligibility, and during the sophomore year when relatively few "make" the teams as regulars, the average grade of the athletes was equal to the average grade of the non-athletes. But during the junior year, and more markedly during the senior year the grades of the athletes fell below the grades of the non-athletes. This was true even in a college where there is none of the high-pressure variety of athletics. I think no one would contend that the values an undergraduate receives from participation in sports to such an extent that it adversely affects his scholastic work are comparable to the values he would receive if he participated only to an extent which would maintain his physical vigor for his intellectual work.

THE customary program of physical education and athletics is often defended upon the ground that it is valuable in the work of promotion, in the maintenance of community interest, or in the development of the loyalty of the constituency. This is more false rationalization. In reality it should have no more to do with any of these worthy objects than any other part of the educational program. For more than a decade it has been asserted that students were thronging to college in such insistent numbers that highly selective methods of admission were necessary. Yet during that period the most ingenious schemes for colonizing athletes have been developed, and football has been openly used, even by some of the very largest schools, as an advertising medium. Despite popular opinion to the contrary, every careful study of the matter has demonstrated that victory or defeat does not significantly affect attendance; and it certainly does not affect income other than gate receipts. Even if it were otherwise, it is manifest that college publicity ought to center about major intellectual objectives. Social life and sports should occupy distinctly secondary positions. It is a slander upon community intelligence to intimate that only by an appeal to its love of victory may the constituency be brought to understand the value of the college.

The alumni, in particular, have been appealed to by an extravagant athletic emphasis. In point of fact the alumni should not appear in the pattern at all, save as they have their proper representation upon the board of trustees of the college. This is not to be interpreted as an assault upon the alumni, or as an attempt to flout their desires. It is one of my sincere beliefs that the alumni have not been so greatly at fault. With a few honorable exceptions, almost no sustained effort has been made to make the relationship between the college and its alumni primarily intellectual in character. The graduates are usually

given a gossip magazine, frequent appeals for money, and news about athletics. When faculties and administrative officers cease talking about the alumni as though they were brainless persons with no other interests a great stride forward will have been taken. Every serious attempt at the establishment of an intellectual contact between the college and its alumni has met with success. As that program becomes general, and develops momentum, the problem of the relationship of the alumni to athletics will sink into insignificance.

The high-pressure program has often been defended upon the ground that it improves the "morale" of the student body. One president expressed it in these terms: football "invigorates the life of the college." I doubt that the hysteria of victory, or the gloom over defeat, incident to undue stress upon football, actually invigorates the life of the college. I deny that the appeal to a man to set aside his own wishes and interests so that he may fight for the fame of good old Myopia is educationally legitimate. If the discipline of the coach were exercised by professors, it would produce a roar of protest. And if the hyper-emotional appeals which characterize a football rally were made in the name of religion the college would be denounced as backward and intolerant. College morale should rest squarely upon fine teaching, an interesting social life, and a sane recreational program. There are problems enough in the attempt to create an atmosphere of intellectual purpose; they are made much more difficult by the false morale incident to athletic over-emphasis.

In point of fact the students themselves, in many institutions, have made it perfectly patent that the whole ballyhoo is stupid and unreal. More than once they have precipitated overdue reforms. So far as the constructive results of football "invigoration" are concerned, no one has ever produced evidence to indicate that intellectual life prospers and thrives in direct proportion to the percentage of victories or the size of gate receipts. In fact if the argument that high pressure football is necessary to student morale had not been current for years one would regard it as too stupid to be invented. Nothing is plainer history than that the more famous football colleges have not led the way to the intellectual renaissance of the American college.

Cultivation of public attention and community interest, alumni loyalty, and student morale are all not only legitimate but important. But it is manifest that it is not desirable, and it is not proper to achieve these ends by any exploitation of students. In so far as these objectives may be achieved by student activity educative in character, and without any deflection from the legitimate goals of the educational process, there can be no criticism.

**WE** HAVE had a great deal of rationalization of the absurdities of the athletic program under the guise of character building. We have all heard it said that the coach is a more potent influence

in the matter of character than the dean of the chapel. But the hunger for advertising, the victory complex and the "big game" ambition are associated with a whole host of petty dishonesties. There are very few elements in college life that do more to corrode character than the shady practices associated with the colonization of athletes. When rival institutions bid for a boy on the basis of his physical prowess he is not to be blamed for a distorted sense of values. Whoever pays a boy, by whatever indirect device, when he is not supposed to be paid, is helping him build an expectation and a habit which will prove detrimental to his character. Borrowing money is serious business; whoever makes a "loan" without expectation of repayment, is helping break down a boy's sense of the importance of meeting his obligations. Giving a boy grades he does not earn, or giving him a job with nominal duties or with pay higher than the job deserves, is injurious to character development. To prate about the influence of the coach or about character building in an institution, where any of these devices are tolerated is shameful. The coach, under proper conditions, may exercise great influence, as may a teacher in any other field. But the integrity of the institution itself is a necessary precedent.

**I**N CONCLUSION, speaking as one who has followed this matter for many years, and as one bearing the scars of battle, I am not so pessimistic as my friends in your organization. Do not wait for the president. Frame a sane and balanced program, and fight for it boldly. The newspapers will back it; the sports writers may call you professors, as though that were a term of opprobrium, but the editors will call you educators. The undergraduate is already, for the most part, won over. The alumni have centered their loyalty about the theatrical elements which were played up to them; they have a deeper, a more sincere, and a more significant loyalty to which you can successfully appeal. The trustees and the public have supported the institutions of the country with a generosity which is, soberly speaking, one of the wonders of the world. For every dollar that has been given because of interest in high-pressure athletics, there have been thousands given in the hope that the colleges will do something intellectually significant. There is no room for doubt that they will continue to support a sane and balanced program. Indeed many of the greatest potential benefactors will heave a sigh of relief at the disappearance of the most serious threat to the integrity of the college. I have a profound faith that the distressing era of moral fatigue is drawing to a close, and that all the constituent elements of the American college are ready for your leadership.

# Physical Education at the University of Pennsylvania—from 1904 to 1931— and the Gates Plan

By R. TAIT MCKENZIE, M.D.

*Research Professor of Physical Education, University of Pennsylvania*

**I**N October, 1904, the new Gymnasium, "Weightman Hall," and the stands about Franklin Field to accommodate 19,000 people were complete; and Physical Education was admitted to all the rights, privileges, and penalties of the Academic Family.

The old department had struggled on with limited powers and still more limited accommodation, and had done good work under a series of part-time directors; but the time had come to make a new start.

The new director was given a full professorship on the Medical faculty and executive rank, with seat on all the Faculties ex-officio.

The Board of Trustees passed a resolution requiring all undergraduates to undergo a medical examination on entrance, and to take a minimum of two periods of exercise a week under the direction of the department for all four years with credits and penalties the same as in all academic subjects—a radical policy then and even now.

At the formal dedication of the Building in December, 1904, the Director concluded his address by saying:

"The policy of the department may thus be said to contain something of the hospital clinic, a great deal of the class room and laboratory, and a little of the arena."

The first tasks of the department were the medical examination of the students, the equipping of the Building, the starting of classes, the exploration of the University by attending faculty meetings, speaking at student gatherings, alumni and class reunions, and watching with interest the "May Day Celebration" in which the three most unpopular professors were burned in effigy, little realizing that one day he was also to suffer this vicarious martyrdom at the hands of the indignant and rebellious proletariat.

The starting of gymnastic classes in February, 1905, soon gave a chance for an exhibition, and this was followed by an outdoor show in April on Franklin Field demonstrating class gymnastics and class boxing and wrestling, while fencing was brought to the attention of its friends by talks on armor and swords with bouts illustrating the use of various weapons; and swimming by demonstrations of life-



saving, fancy diving and other feats; for in these early days such entertainments were well attended. This form of propaganda is, I believe, valuable. It dispells ignorance and excites interest in our subject. We carried it on systematically for a number of years; and pictures of our annual pageant became part of the world news service. I came across one long afterwards at a movie theatre in Amsterdam which it had reached in touring Europe along with the other instructive films that keep the audience quiet till the melodrama comes on.

All this stir made its impression on the faculty. They at first were inclined to consider Physical Education as a sort of bastard child left on their doorstep, diverting the time and nourishment destined only for the legitimately begotten members of the academic family. This attitude was overcome, in part at least, by discussions at Faculty meetings which the Director assiduously attended, papers read before medical and educational societies, and demonstrations of the work done which spoke for itself; and now one does not hear its place at the educational table seriously questioned.

The students were at first enthusiastic; they enjoyed it. When the penalties began to obtrude themselves, however, that was another question. Some had taken lightly the regulation. They liked the added credits, but forgot that they also involved penalties; but when they found themselves conditioned as a result of neglect they "troubled deaf Heaven with their bootless cries" and led the director to the stake with howls and execration while he was burned to a cinder, fortunately in effigy.

Had he been an appointee of the Athletic Association as was at first suggested to him, his career would at that point have been ended. But he also had his supporters; and it was but a few years later that the graduating class after four years of it dedicated to him the "Class Record," the highest honor they could give. And thus he met early in his experience the two impostors, "Triumph" and "Disaster."

The medical examination was made on two cards at first, and afterwards on one; and included questions about personal habits and illnesses with which you are all familiar.

One point about the examinations may be mentioned, however, and should always be kept in mind. The University is concerned first with finding out if a student has a preventable handicap to his success as a student and how it may be corrected. Hence, the examination should secure this information as soon as possible. Next, the University is concerned with how he compares with his fellows; if he can be improved physically; and how it may best be done by advice and a course of physical exercise. It especially wants to know if it is really done in the course given.

The design of an examination form should be elastic and *not too long*. The facts found should be *used* more than is usually done. Too often statistics pile up and are filed, forgotten, and finally sink into the oblivion of a dusty closet.

We made it a policy to publish yearly a list of the defects found; and for the first fifteen years had a complete set of measurements from which we compiled a percentile chart showing the mean proportions and variations from the mean for the whole student body, with which any student could compare his own proportions and development.

This being completed, the form was then varied to include seven measurements of the chest, active and at rest; and information was then got as to the increase in chest girths and capacity during the four year course of exercise.

And now after twenty-five years we are able to prove the gradual increase (from 66.8" to 68.2") in height of nearly 1.5" in the incoming students, and in weight (from 132.4 to 136.1 pounds) of nearly four pounds, a change in the type of student within a period of a quarter of a century. The accumulation of such facts and their publication are well worth while.

From time to time special investigations were undertaken on the occurrence and stability of reflexes, presence and meaning of heart murmurs, and other subjects which were published as papers, some of them before this Society.

The danger in many examination forms is that they become too complicated. If a form is not to become too cumbrous and full with its own weight it should be changed from time to time, and as soon as the information sought for is obtained, the question dropped.

The examinations divided the student body roughly into three classes physically:

- (1) Defectives
- (2) Average
- (3) Athletes

(1) The defectives were referred to specialists for correctible conditions of the eye, ear, nose, throat, and teeth. The heart and lung cases were kept under observation, and in some cases put on special diet and rest. Exercises for postural defects were written out on cards which were widely copied, and the prescriptions were given by instructors. Many a low shoulder was, however, left for the tailor to correct; and though many horses were led to the water not all of them drank.

There was a clinic at the Gymnasium for injuries, and the Director became a familiar sight at football games with his little black bag; but the general medical care of the students was in the hands of

the student physicians, the University Hospital, and whoever else they might wish to consult; and no correlation existed between these different agencies.

In 1907 the Director was made Professor of Physical-Therapy in the Medical faculty, and the requirement for physical education for second-year medical students was changed into a course on massage, corrective exercise, electro and hydro-therapy, which he gave to students of the second year (the first professorship of this kind, I think, in any American medical school).

(2) The average student was started with class work in the gymnasium. This was so designed as to take him over the main co-ordinations that all should know but few could do—running, jumping, climbing, striking, catching, throwing, and defending himself. This is not the place to go into details, but these *were* and still *are* taught in series of progressive lessons with periodic examinations and, as they show ability and interest, students are urged to go into games and sports that have added the spur of competition.

Many students, however, prefer to take their minimum of exercise in these classes in which they learn much that is of value and get a good sweat and a shower all within an hour.

(3) It was in the development of these competitive forms of exercise that the long contest for control by the Department began.

Sports take room and supervision, and many of the students who enjoy them will never become great athletes, and yet when space is limited, it must be reserved for the *third class* of student, the *athletes*, the physical aristocrats of the college world.

In 1904, the Athletic Association was an incorporated body composed of alumni, students, and faculty, but independent of the University. They hired and fired coaches, arranged games, conducted intercollegiate disputes, kept alive old feuds, and generally sailed the stormy seas of intercollegiate politics.

The new Department took over the medical examination of the athletes, and also medical care of men in training in part, also the care of accidents, ably supported by the University Hospital. Thus the first step was taken in the control of athletics by the Department.

The forbidding of an unfit student to play brought protests from the coaches and they sometimes did their best to keep cases from the doctor that should have been reported; but it worked fairly well, although unsound from an administrative standpoint.

The Faculty Committee also would remove ineligible players, sometimes on the eve of a game, and were scorched by the indignation of the outraged coaches and students at mass meetings.

The attempt to flood Franklin Field with men who were not good material for the Varsity teams was not received with favor by the



Athletic Association; and with the increasing numbers of students, the struggle for time and space on the field increased. A cartoon was printed showing Franklin Field on a "quiet day" with runners, jumpers, ball players, hammer-throwers, field-helpers, covering it in a swirling mob.

The same thing occurred indoors. It was not easy to conduct classes in the gymnasium while the temporary stands were being put up for a basket ball game the same night, and workmen were hanging decorations for the "Junior Prom" the day after tomorrow.

New fields were, however, developed for the intramural work with the slogan, "Athletics for all"; and both managed to get along until all was changed by the Great War.

About 1920, began the era of inflation in which we shared. The old Athletic Association and Faculty Committee were merged into the Council on Athletics; and in 1922 an attempt was made to curb the increasing friction between it and the Department of Physical Education.

In 1922 (April 26th), the following resolution was adopted by the Board of Trustees:

*Resolution:*

"That, as soon as practicable, there shall be established a Department of the University to be known as the *Department of Physical Education and Athletics*, at the head of which there shall be a Director appointed by the Trustees with general powers and duties comparable with those of a Dean of any department of the University, which Department shall be charged with the oversight of the physical life of the students of the University, and shall control the teaching and management of all athletic sports, contests, and exhibitions and, subject to the approval of the Board of Trustees, promulgate all rules and regulations necessary for such purposes."

It was proposed to write this into the statutes of the University, then under revision, but action was referred to a committee and there died of anaemia so frequent after sojourn in a pigeon-hole.

The Director in his annual reports, however, kept emphasizing the necessity of action, and each year, the resultant Committees appointed to take action always agreed with him in principle, but no one would grasp the nettle that was beginning to grow up rank and strong in our midst.

Meantime, the relations between the Department and the Council kept going from bad to worse.

Under Mr. Sidney E. Hutchinson's able chairmanship, the stands were enlarged to accommodate 50,000 and finally, about 1925, an ambitious building program was undertaken to include a palestra to accommodate 10,000, a swimming pool to accommodate 1,500, a gymnasium floor 250 ft. x 75 ft., and the double-decking of the stands on Franklin Field to bring the capacity to nearly 80,000.

The sum involved was \$4,000,000 and it was financed by bonds guaranteed by the University in 1926; but even then the Trustees did not exercise their prerogative to control the financial affairs of the Council or unify the control of the teaching staff.

The expenditure required an annual income of nearly \$250,000. Basket ball showed a small surplus. Track with the "Relay Carnival" broke even or a little better. All the other sports reported deficits but football. Obviously nothing must interfere with the extraction of the last ounce of gold from this mine.

A doctor paid by the management might be less likely to interfere with the coach's natural desire to play his star in a critical game so long as he could keep going, regardless of after consequences. The obstructive professor or the conscientious young instructor must be shown that it was dangerous to thrust a quarter-back into the quagmire of probation and ineligibility, however obvious the facts; and also that a helping hand to one floundering in its depths would be substantially appreciated if the man could be got into uniform in time.

The struggle between the ethics of an Amusement Enterprise and an Educational Institution which was abroad in the college world became more and more acute.

The Director found himself "outmaneuvered and outvoted." He was smilingly told after a galling defeat to remember that "one with God was a majority."

It did not reassure him; and in 1927 he tendered his resignation to the Provost with a report again recommending the reorganization of the Department with the abolishment of dual control. The usual committee was appointed, oil was poured into his wounds, and he was urged to carry on till the buildings then under construction were completed and the teachers' course then in process of organization was staffed.

The first class in the teachers' four-year course in Physical Education was graduated in the spring of 1928. The new "Palestra" and swimming pool had been finished and the new "Hutchinson Gymnasium" was completely equipped and in running order. The Director could point to these facts, but also to the fact that no action had been taken on his annual recommendations for reorganization.

This he did in tendering his resignation for the second time with emphasis on the intolerable conditions resulting from conflicts inevitable when two independent organizations, a Council and a Department, were attempting to deal with the same or interlocking problems and holding divergent views. A committee was appointed to study the question.

The Director was asked to reconsider, but he was firm. He was asked to take a year's leave of absence, while they looked about for

his successor. He weakened, and made a tour of the Mediterranean, visiting the colleges of Physical Education at Geneva, Budapest, Prague, Munich, and Berlin.

The chairman of this Committee was, however, a different kind of chairman from the others, and events began to take place.

When the Director returned, he found that the chairman had been promoted and was none other than the newly appointed President of the University, Thomas Sovereign Gates.

In the first interview, President Gates explained that he wished to be on sure ground before any changes were made. He proposed to appoint a committee of two to gather information, investigate conditions, and report to him, and he asked the Director to continue in office and act as advisor to his committee (Michael Dorizas, and Gordon Hardwick).

They visited colleges from coast to coast where likely information was to be got, questioned alumni, faculty, students, Carnegie Foundation workers; and in February, 1931, presented a complete and exhaustive report.

After study and discussion, President Gates issued his decision, known as the "*Gates Plan*" which briefly is as follows:

*Brief Outline of Gates Plan:*

*Department:* To be called the "Department of Physical Education."

*Head:* Dean, responsible to the President.

*Three Divisions:* Headed by Directors as follows:

- (1) Division of Student Health, for the examination of incoming students, care of sick, isolation of infectious cases, personal hygiene and sanitation, with an advisory board from the Medical School.
- (2) Division of Physical Instruction, covering class work, intramural sports, teacher training and coaching.
- (3) Division of Intercollegiate Athletics. Covering the management of competitive Varsity sports, through student managers, with an advisory board on athletics, the remnant of the old Council, but purely advisory.

The Publicity Department of the Council to become part of the Bureau of Publicity of the University.

The Distribution of Financial Aid to Students, to come under the University Welfare Committee.

*Eligibility* to be determined by a Committee of the Faculty.

*Budget:* One budget, to be prepared by the Dean, to go into the General Budget, and the treasurer of the University supervising financial expenditures, subject to the same scrutiny as other Departments.

*In other words*, sports were to be given back to the students, teaching to the Faculty, and the deficit to the Treasurer.

Other changes outlined as matters of policy were the revision of intercollegiate relationships, the abolishing of the Training House, the curtailment of football training, the choosing and appointing coaches of faculty calibre and placing them on the faculty with

the protection and consequent reduction of salary that goes with it.

As soon as the report of the committee was received, the President asked the Director to approach Dr. E. Leroy Mercer of Swarthmore. This approach led to his acceptance of the position as Dean of the new Department.

The Dean-elect and the Director approached Harvey Harman, and he became the new football coach.

The retiring Director formally introduced to the Dean the members of the old staff, and they pledged him their loyalty. For the two spring months of 1931, Dean and Director together went over budgets, records, and appointments, while he familiarized himself with the workings of the Department and discussed new plans.

In May, the retiring Director wrote out a statement for publication that after twenty-five years of service he was severing his connection with the University, which he sent to the President before giving it out to the press.

This time, no committee was appointed. The President with the connivance of the new Dean, I suspect, proposed the founding of a Chair to be called the "Research Professorship of Physical Education," and asked him to occupy it and so act in an advisory way for a year or two at least while the new organization was being completed and tested.

And so I lay down my pen which has of necessity been concerned only with water that has already gone over the dam, and turn over the rest and most interesting part of the story to my friend and successor, Dean Mercer.

As the French would say, "The word is to him."

# The Gates' Plan

By E. L. MERCER

*Dean of the Department of Physical Education  
University of Pennsylvania*

THE following quotations from President Thomas S. Gates' Statement of February 3, 1931, express the underlying thoughts and motives which prompted the investigation into the athletic affairs at the University of Pennsylvania.

"I conceived it my duty to inform myself thoroughly as to the provisions which this University makes for the intellectual, spiritual and physical well being of the students committed to its care. Particularly, I found it necessary to satisfy myself upon the adequacy of the opportunities afforded to the students to acquire life habits conducive to health, physical fitness and intellectual vigor, without which a university education lacks balance and completeness."

The instructions to the Committee of Investigation were, in part:

"A survey and report upon the whole field of Student Health, Physical Education of students and Student Athletics, with the object of bringing about at Pennsylvania a thorough-going co-ordination of effort in, and a more centralized administration of, the activities covering the physical life of the students of the University."

Another quotation:

"The underlying principles involve consideration of the organized activities of the student body in the light of their real educational significance and calls for the incorporation of this control and management into the administrative structure of the University. To accomplish this, the University proposes to establish a new, single-headed department which will assume responsibility for the proper administration and co-ordination of all the activities now existing or subsequently to be included in the fields of Student Health, Physical Education and Intercollegiate Athletics."

Through the transition period of less than a year, the changes inaugurated and the appointments made have conformed with the ideas stated above. The principles and practices governing other departments of the University have been studied and followed. The welfare of and benefits to the undergraduates have formed the background for each move. Undergraduates have been thought of as the whole student body, and not as any one segregated or special privileged group.

The Physical Education Department has been conceived with each of its three Divisions contributing to the full functioning of the other two.

The Health Service to students, which heretofore has been rendered by student physicians, University Hospital staff, Athletic Council team physicians, and physicians of the Physical Education and Hygiene Departments, each responsible to different University officials, has been co-ordinated through the establishment of this Division as a part of the newly-formed Department. The interlocking relationship of the Student Health Service with the University Hospital and the Hygiene Department of the Medical School has insured the comprehensiveness of the medical service to be given.

The Director of Student Health, who has the rank of Associate Professor of Hygiene, and his staff physicians, are available for some of the work of this Department, such as Hygiene teaching and problems of student health research. Physicians of the University Hospital Staff are available for consultation and treatment of those students transferred to the student quarters of the University Hospital.

Problems of student health *research* involving the use of already established units of the University Medical center are being started by members of the Health Service Staff in conjunction with other University authorities in various fields. Funds for this purpose have been set aside in the Budget of this Division. Heart studies in the Maloney Clinic, and tuberculosis investigation in the Phipps Institute constitute a part of current activities of a *research* nature.

The building formerly used as living quarters for athletes in training has been equipped for utilization as a Health Service Unit. In addition to having an infirmary adequate for the needs of both men and women students, rooms have been set apart and equipped for daily, general and special dispensary service. Full-time resident and staff physicians have been appointed, and specialists drawn from the University Hospital Staff have accepted service for specified hours. Special dispensaries include: Surgery, Ear, Nose and Throat, Skin, Eye, Heart, Lungs and Mental Hygiene. Routine physical and periodic health examinations are conducted in this building. Laboratory and other facilities of the University Hospital are available at all times. The Student ward and private rooms of the University Hospital are used in cases of serious illness, or where operative procedure is indicated. Students are admitted to these privileges through the medium of the Student Health Service and on recommendation of the Director or his assistants.

Medical service to athletic teams is rendered by physicians assigned by the Director. Those students seeking modifications of or exemptions from Physical Instruction Requirements are examined and their cases decided upon by this Division. Through the routine physical examination all students will be graded physically and their work planned accordingly.



It is a further aim of the Physical Education Department to assign the Student Health Physicians and members of the teaching staff of the School of Medicine to teaching duty in courses for Graduate and Undergraduate Students majoring in Physical Education. Already some progress has been made in this direction.

The Director of the Student Health Service has arranged with the Dean of the Medical School for all students of the Medical Department to undergo a routine physical examination, at the same time receiving instruction in procedure in this important phase of medical practice.

The student Health Advisory Committee, on appointment by the President of the University, brings together all the agencies contributing to health and well-being of the undergraduates. The Vice-President in charge of Medical Affairs, Vice-President in charge of Undergraduate Affairs, Dean of the Medical School, Dean of the Physical Education Department and the Professors of Medicine, Surgery and Hygiene are at present serving on this committee.

**C**ERTAIN necessary procedures have been carried out in conformity with the new plan. I shall enumerate the important steps without going into detail.

All funds of the Athletic Division are now held and dispensed by the Treasurer of the University. Purchases for the Physical Education Department as a whole will be made through the University Purchasing Agent.

Determination of eligibility for participation in all student extra-curricular activities rests with the Faculty Committee, appointed by the President. A survey of eligibility standards is now being made.

The Publicity Department for the Athletic Division has been absorbed by the University Publicity Service and functions in accordance with general University policy.

Subsidization of athletes has been discontinued. All funds for needy students are administered by a University Faculty Committee. This Committee is charged with the responsibility for the administration of all scholarship funds. Non-athletes and athletes will share these funds on the basis of scholastic proficiency and established need.

All committees serving the Division of Inter-Collegiate Athletics are appointed by the President of the University and are advisory in character.

The Advisory Committee on Intercollegiate Athletics is composed of 5 members of the faculty, 5 undergraduates and 5 graduates. The Advisory Committees for separate sports are composed of one member of the faculty, one graduate, the coach, captain and

manager of the sport. The Chairman of the Advisory Committee on Intercollegiate Athletics, Dean of the Department of Physical Education, one graduate and the Director of Intercollegiate Athletics are ex-officio members of all Committees. For the most part, Sports Committees are composed of members drawn from the larger Advisory Committee. These Committees replace the Council on Athletics and former Sports Committees, and serve to retain the interest and help of the alumni body, students and faculty.

*Franklin Field Illustrated* has been adopted as the official organ of the Physical Education Department.

In regard to football, some changes in policy have been adopted. Schedule commitments of long standing and other local conditions have prevented a full exercise of the limitations stipulated in the President's Report.

Pre-season training for the season just closed was limited. The lodging quarters for athletes in training were discontinued. Rest trips before important games were greatly minimized. Spring practice, if held at all, will be for those boys who elect it. It will in no way interfere with anyone's desire to participate in another sport.

With the inclusion of the Division of Physical Instruction and Intercollegiate Athletics under one Department, certain adjustments have been found necessary. Whereas formerly coaches confined their efforts to the varsity teams in intercollegiate competition and derived their salaries from the Council on Athletics, a supposedly self-supporting organization, at present these same men are devoting their extra time to other phases of the combined program.

Intramural sports teams and recreational groups of many different types are getting the benefit of contact with, and teaching from members of the varsity football and other coaching staffs. The intramural program, under such a plan, is being enriched and elevated from an "in between" position to a place of real educational importance. In expanding this phase of student activity we are proceeding on the premise that fundamental teaching and organized leadership by trained instructors are essential to success. Through the teaching of the fundamentals in various lines of sport to large groups we do not expect to develop numbers of athletes of varsity calibre but we do expect to discover hidden ability and create or mobilize in individuals of each group the ambition to strive for varsity excellence. It is our conception that the ruthless cutting of varsity and freshman squads, to which undergraduates respond because of real enthusiasm, is one of the most destructive tendencies in the present day scheme of college athletic management. We have adopted the policy of holding all volunteer candidates under instruction, setting apart separate times for practice, teaching similar systems of play to each group and offering individuals the oppor-



tunity to progress from one squad to the next as their aptitude and proficiency become evident. We are assuming that competition between organized groups is essential to continued enthusiasm and that some basis for assuming the existence of rivalry between groups is fundamental. We propose to capitalize the friendship element which contributes so much to team play and which develops out of constantly working together on a given team. We believe that in any large University body in any one of our popular sports a varsity team alone in outside competition does not constitute a true democratic atmosphere. Occasional outside engagements for second and third varsity and second and third freshman teams offer incentives for participation by larger groups in each sport.

One experiment already tried will serve to illustrate. In football we committed ourselves to the task of offering the sport to all physically fit undergraduates who wished to play. Before intramural squads were organized, official calls were sounded for candidates in three separate groups, the varsity, which included junior varsity, freshman and 150-pound varsity. Schedules were announced for four groups, including the varsity, and coaches whom we had selected as of varsity standing and interchangeable at any time were assigned to each group. In regular, daily practice all squads used tactics and systems of play as adopted by the combined coaching staff headed by the Director of Football Activities who also served as Head Coach of the varsity team. Full equipment was supplied for each squad. If large numbers of candidates in each group, enthusiasm on the part of coaches and players and the attitudes of undergraduates, faculty and alumni can be taken as a criterion, the play was a complete success. Our 150-pound varsity team played a three-game intercollegiate schedule unheralded and for the most part unwitnessed, but I have never watched a finer display of sportsmanship than was evident in these contests. All these minor football groups, together with the interfraternity, interdormitory and class squads constituted an interested and enthusiastic part of the cheering section in our varsity contests. These boys, with complete understanding of the game of football, were a wholesome factor in the display of spirit by the whole mass of undergraduates.

The varsity team, in all sports, still holds the same high prestige and great importance in the minds of undergraduates as in former years. We propose to encourage this attitude by placing the same high value on expert coaching and playing as we do on instruction and intellectual performance in any other department of the University. Emphasis of this character is justified so long as the one in control of a given sport understands the motives and objectives involved and is willing to make his part of the program conform to the demands of all requirements of the University for which the

members of his particular squad are held accountable. Needless to say, this program promises to be expensive and demands extensive indoor and outdoor playing space and equipment. With a large staff, on full-time appointments with a salary range commensurate with their faculty rank and by a painstaking scrutiny of budget requirements, we are expecting to meet the financial issue. Already our indoor facilities are adequate for an extensive program. Recently we have added the eighth field of gridiron dimensions to our outdoor space and houses are being demolished in preparation for another area adjacent to Franklin Field and our gymnasium units.

Our four-year-old baby, the undergraduate school for majors in Physical Education, is being taught the habits most conducive to its health in the new surroundings of the changed Department.

The grown-up son, by name, the Physical Instruction Division, nurtured and developed through infancy by the guiding hand of Dr. McKenzie, has accomplished his long sought for marriage with the Intercollegiate Division and has assumed the role as head of the house with the dignity which becomes his position.

# The Function of the Football Coach in a Program of Physical Education

By HUGO BEZDEK

*Dean of the Department of Physical Education  
Pennsylvania State College*

A YEAR ago, at the meeting of the American Football Coaches Association I presented a paper dealing with the present status of football and the football coach. Because of certain experiences which followed the reading of that paper, it was with some cautiousness that I accepted Dr. Scott's invitation to appear on this program. However, I am extremely interested in performing any task which may improve the relationship and understanding between the Directors and the Coaches.

This subject, "The Function of the Football Coach in a Program of Physical Education," forcefully brings to mind the entire question of football—its growth, its development, changing conceptions and conditions regarding it, the past, present and future methods of instruction, the jurisdiction and place of football in the program of physical education.

Any one of these factors presents an opportunity for hours of discussion. I am taking the liberty in touching certain aspects of the problem rather briefly, while others are dealt with in some detail.

A consideration of football and physical education necessarily demands a brief backward glance into the historical relationships between physical education and education. Not so many years ago, Education was interested solely in the teaching of academic subjects. The administration and faculty had a negligible understanding and appreciation of the development and maintenance of the health and personality of the student. Extremely meager provisions, or none at all, were made for the physical education personnel, facilities, and program. Education either was not ready to accept these responsibilities or it was somewhat short-sighted as to the possibilities in this field of physical education.

Consequently, physical education struggled for many years—and is still struggling today in some localities—for a recognized place in Education. Through the persistent efforts of past and present leaders in physical education, who have based their theses upon scientifically sound foundations, there is emerging a world-wide recognition of physical education; for example, the contemporary developments in Russia, Italy, Germany and Spain. However, even

today some modern educators, like their colleagues of the 19th century, regard physical education as a special process, and games and sports as necessary but mischievous play of college boys.

In general, however, the field of physical education has broadened so that the program today in some institutions is in the hands of administrators whose departments or schools are comparable in every respect with those of other departments within the institution. This indeed is a notable achievement and a remarkable development.

ONE of the phases of the modern program of physical education which is resisting progress and change in terms of the newer conceptions of physical education, is the game of Football. From the early beginnings of this sport in America, the attitude of college authorities toward it has been negative and unresponsive. The game was abolished in some instances and seriously limited in others. However, the attractive characteristics of football reasserted themselves and the game, to date, has survived.

In these early days, football was a proverbial "orphan child" and grew to young manhood without the parental guidance of college authorities. The students were permitted to assume the responsibility for its growth and development. From an unorganized activity it was transformed into a well organized sport involving team play and team spirit. Competition between college teams, the desire for advanced instruction, and the desire to gain supremacy, stimulated students to turn to someone better informed than themselves. Consequently, former players and alumni were called in as coaches. This instruction at first was spasmodic throughout a given season, but the seasonal coach soon came into prominence.

The spectacular features of football, capitalized upon by the press, attracted an ever-increasing following of college people and the public. Gate receipts mounted to Herculean sums. Pride and selfishness spurred certain interests within and without the colleges to have winning teams—to have undefeated teams. A search for outstanding coaches who were paid salaries out of proportion to other college instructors, and a scramble for outstanding football players were two of the factors which resulted in the game and the coach gradually outgrowing, and even defying, student and alumni control and guidance. The game thus has become a victim of circumstances. But the victim was dangerous enough to demand a tardy action on the part of college authorities. The entire question has become a matter for serious thought and study, for the very standing and good name of some institutions are involved.

One of the chief problems which is confronting the college authorities is that the game demands a great deal of the participant's time and energy. Football has developed into a very intricate

and complicated game. It is reasonable to assume that the game cannot afford to require more of the student's time and energy. In order to avoid a static condition of play—such as exists to a certain degree in baseball—the game must necessarily return to a more simplified type of play.

Another development of modern football which is facing college authorities today is the health and safety factor. This season's (1931) results in death and impaired health may be exceptional. Even so, these factors are matters of deep concern not only to the college authorities, but to the Football Rules Committee, along with its constant struggle to balance the power between the offensive and defensive aspects of the game.

The conditions related to modern football, with our contemporary thought and philosophy regarding it, have resulted in other problems about which the thinking public and college administrations are concerned. Today, we are confronted with the accusation that players are being exploited and subsidized, and that the letter and spirit of amateurism has been compromised. And it is not uncommon to hear and read that football has become a tremendous enterprise which is purely professional in nature. Furthermore, in the past, the student's point of view toward college and post-college life has been somewhat warped through an overemphasis of the *relative* importance of football. The very objectives of a college education have been overshadowed in some institutions. However, the student is beginning to change his attitude. There is a growing sentiment among undergraduate athletes and non-athletes which questions the relative value and price of intercollegiate football. Not a few colleges have students who are excellent athletes who will not afford the demands made upon them by the game. Today, those most interested in football are being challenged by students to make football reasonably available to every young man who may be benefited thereby. The thinking college student is asking for a game that promises real enjoyment, a reasonable degree of physical benefit, social contacts, and certain emotional controls approved by society. Students no longer accept the worn-out tradition that it is a *duty* to turn out for the varsity team. They are weighing relative values more carefully than college students of other years. They must be shown where intercollegiate football is fulfilling their interests and needs, and where it is aiding them in realizing any of their purposes in life. The student has been a vital factor in bringing sanity back to a consideration of the game of football.

In consideration of this new point of view which is spreading rapidly among the student bodies in our institutions, and in view of the fore-mentioned major problems related to the game of football, it seems reasonable to encourage a modification of schedules,

the limitation of practice periods, and also to agree upon certain regulations limiting and supervising the participation of athletes in intercollegiate sports.

Another of the major problems related to modern football which confront those who are responsible for the welfare of the college, is that some of the football coaches have failed satisfactorily to demonstrate an interest in, and an appreciation of the higher purposes, ideals, and objectives of the institution.

**W**HAT *measures have the coaches initiated to deal with these many problems which have been touched upon?*

The coach—particularly the one who is employed on a seasonal basis—has been alert to, and cognizant of this point of view. He has appreciated that he was considered undesirable by certain of his colleagues in the college and that his college and social relationships seemed somewhat restricted. Most of the coaches, past and present, were and are gentlemen of sterling qualities. They are dynamic and efficient leaders who are genuinely interested in the progress of the institution and the students' welfare, and who desire to place the coaching profession on a higher plane. However, they have recognized the threats which have been made against their profession and their livelihood by the uncertainty of tenure. Certain institutions are known as "coaches' cemeteries"—the tenure of service is as unstable as that of the leading ladies of the screen. Extremely few of our larger institutions provide any encouragement for even a reasonable tenure. The number of major institutions who have had their present head football coaches for ten years can be counted on one hand.

It is not surprising that the football coach sought ways and means of self-protection. One of these measures was the organization of the American Football Coaches Association. At the first meeting of this Association there were not over twenty-five coaches present. Today there are about six hundred members. Being one of the founders of this Association, I sympathize with any measure which aims to maintain the highest possible standards of football and the coaching profession. This Association promotes discussions on matters of interest to coaches, aims to improve football conditions in American colleges, sponsors ethics in coaching, aids in upgrading officiating, and helps in the formulation of rules.

In recent years, a Stabilizing Committee was authorized to present ways and means of raising the standards of the football coaching profession and to promote measures that would insure a career in education.

A study of the reports of this Committee reveals a trend of thought which emphasized the point that security and protection



were the major findings of this Committee. The recommendations of the Committee were:

1. That the coach become a member of the Faculty.
2. That the coach have a long term contract.
3. That the coach study the organization and administration of athletics at his institution.
4. That the coach study athletic conditions at his college.
5. That the coach study the type of schedule most desirable.
6. That the coach indulge in no campus politics.
7. That the coach prepare himself in the most learned techniques of the game.

These measures seemed to be devised for self-protection. Unfortunately they suggest mere formalities. As such, they are only half-measures. They fail to demonstrate a true understanding of the problem. The coach apparently fails to recognize that the solution to his problems lies in the fundamental principles of satisfactory qualifications which come from adequate preparation and training, and *general* service and usefulness in the several aspects of physical education, throughout the entire school year. Such measures are entirely accepted and have been long established for other members of the college faculties.

Most institutions recognize in every official way the standing jurisdiction and function of the department of physical education. Certain institutions have authorized the promotion of the department of physical education to the position of a *school* of physical education, comparable to the school of liberal arts, the school of education, etc. Almost every institution in the country recognizes football as one of the established activities in the intercollegiate phase of the physical education program. The majority of institutions have given the football coach rank and salary at least equal to his academic colleagues. Yet, in spite of these conditions the football coach in many institutions continues to follow the procedures and practices, and to assume attitudes characteristic of his professional brothers of a past period in American college athletics.

**W**HAT measures may the Directors sponsor for the improvement of the football coach?

College administrators have been patient, thus far, during this transitional period in which the coach is expected to readjust himself to the general physical education program. These administrators must be given some evidence that the coach is genuinely cooperative, that he has accepted the responsibility of serving in the general program for the student body throughout the entire school year, that he appreciates the full significance of the modern program

of physical education, and that he is interested in professional improvement.

It is imperative that we Directors assume the responsibility for the *direction* of his improvement in service and for the reassignment of his duties in the broader program of physical education. It is we who have permitted the coach to grow up into our profession, unaided and unguided. Frankly, we have been rather indifferent to his professional advancement. Our attitude has not been unlike the attitude of the educators toward physical education in the 19th century. This attitude is very well exemplified by asking you to recall a meeting of this Society, not many years ago, when a paper was presented by one of our members advocating the *scrapping* of intercollegiate athletics and football in particular. Scrapping a problem has *never* solved it.

Most Directors recognize the worthy service which the football coach is capable of rendering in a program of physical education. Is it not a problem of the Director to set into execution measures whereby the coach does render this service?

The first step which is necessary for the solution of this problem is a sincere assurance to the coach that there is a desire for aiding him and cooperating with him, in the working out of his problems. Such discussions would serve as a means of educating the coach to the newer points of view, to the larger values in the broader program. I have found that this is a valuable aid in arousing his appreciation of the newer conception of physical education.

The professional-mindedness of the football coach toward physical education may be hastened and aided by improvement in service through such well-known agencies as,

1. Round table discussions
2. Staff meetings which have a definite purpose and perspective
3. Special speakers whose experience qualifies them to talk to coaches and physical educators alike
4. Attendance at state and national conventions and conferences
5. Reading and discussing professional periodicals and publications.

The football coach's proper place in the physical education program may be enhanced by training in-service, through extension courses, summer courses, and in-service courses. This procedure is securing excellent results at the Pennsylvania State College. Every encouragement should be given coaches to enroll in the theoretical as well as the practical courses in health and physical education. In order to provide for one aspect of the immediate problem, the Pennsylvania State College is contemplating special short courses for college coaches who may secure some professional training during the off-season in the school year when not coaching.

THE Society of Directors of Physical Education in Colleges should especially direct their attention and efforts toward the problem of the training and background of our *future* coaches. In seeking candidates for additional members of my own staff, I have found graduates of certain professional departments who were warped in their point of view toward a broad program of physical education. Undoubtedly every modern director seeks the candidate whose experience and training enables him to be somewhat versatile. We need specialists—true—but I prefer the coach who can handle some of the work in required physical education, who is capable of and interested in being responsible for certain duties in the intramural program, and whose training enables him to be of service in the professional training department. I have found that the graduates of certain professional schools show a tremendous preponderance of training in but one phase of physical education. In some cases, the emphasis has been upon intercollegiate athletics, in other cases formal exercises have been stressed, and still others of these schools have emphasized merely the free play idea. One is often impressed with the zeal with which each candidate attempts to sell his particular type of material. It is difficult to find an individual who has received a training which renders him understanding and sympathetic toward all phases of the physical education program. I have occasionally noticed, in interviewing candidates who do have academic qualifications, that certain individuals are extremely unimpressive, that they wholly lack personality. Is it not the Director's responsibility to see that a mediocre product does not glut the market? Or, are we all after mass production, regardless of the product and the market?

It seems to me that it is highly important that professional training departments be organized so that the prospective coach receive a thorough all-around training in addition to his specialties. These students should receive definite training in a real appreciation of the broader conceptions of health and physical education. There should be no doubt in their minds regarding the fact that football, and other sports, may contribute to the purposes of physical education. There should also be no doubt as to the relative values of the various aspects of the entire program.

These prospective coaches should be prepared to disseminate the newer conception of football as a phase of physical education, to the public schools and to the lay public. It is extremely unfortunate that some institutions offering professional courses in physical education fail to practice what they teach—that the coach should be of service in the entire program.

Furthermore, the prospective coach with a baccalaureate degree should be graduated with the feeling that there is much yet to learn

about physical education. There should be no spirit of finality attached to the completion of the undergraduate work. It is true that all students are not qualified for research work on the graduate level. Some professional departments have definite means of ascertaining those candidates who are qualified to carry on research work, and those who are prepared only for further study. In any case, the graduating professional student and prospective coach should be educated to feel a keen desire to continue his professional education.

The prospective coach should be led to an appreciation of the values of the various professional agencies, periodicals, conventions, conferences, et cetera. The Director of today who is hiring a football coach is much interested in a candidate who has the other qualifications and who demonstrates a professional-mindedness by his knowledge of these factors.

The forward-looking professional training departments are offering courses designed for coaches who wish to broaden their understanding of physical education. Such courses are given in addition to the athletic coaching courses and those formulated for physical educators only.

It seems to me that we Directors should cooperate with the State Departments of Health and Physical Education in elevating and maintaining standards of teacher certification. We should also be eager for the highest possible standards in physical education in State Teachers Colleges and other institutions of higher learning.

Professional training departments should undoubtedly maintain follow-up programs in order that the embryo coach be aided in arriving at a professional equilibrium in the community. There are few if any Directors who maintain such a field representative who assists the new coach in finding himself. The gap between practice teaching and the real job is too wide at present.

THESE paragraphs have set forth the various measures which we Directors can take to aid the present and prospective coach in acquiring his full potentialities in the physical education program.

There is no doubt but that every Director desires to secure maximum efficient service from his staff. It therefore is his responsibility to formulate a program wherein increased efficiency is encouraged. The Director must necessarily make definite plans which will enable the football coach to function in every phase of the program for which he shows adaptation. Within one or two weeks after the football season just past most of the football coaching staff at the Pennsylvania State College were available for service. These coaches have acquired knowledge and skills in vigorous games which enabled us to use them in the different phases of the physical educa-

tion program. Handball, wrestling, boxing, basketball, volley ball, and hand tennis are taught by the football coaches to various squads within a given section of students enrolled in required physical education. During football season no unreasonable demands are made upon the coach. I believe that as a specialist, he should be given every opportunity to demonstrate his abilities. However, during the football season this year, our football coaches organized and supervised intramural football and taught a phase of one of the professional subject matter courses. Some of these football coaches aided in the testing of our incoming freshmen this fall. Others of the football coaching staff helped construct knowledge tests for these first year men. These football coaches have cooperated in other aspects of some of our research projects by setting up criteria which are used by judges in the rating of students in physical education activities. They have also been much interested in preparing objective tests of football which were given to our professional students. Last year, our football coaches conducted a questionnaire study of the desirability of erecting a stadium at our college. As a result of this study we decided *not* to build a stadium.

The better qualified of these coaches serve on various committees of the School of Physical Education as well as general committees of the College. It may be said that none of these coaches had the advantage of more than a few courses in professional training.

It seems to me that the professionally minded and well trained coach in the future will be qualified to serve in all six of the aspects of the physical education program mentioned above. The chief difference will be that he has been *trained* to act in these capacities. His service will therefore be more extensive, less in need of careful supervision, and his suggestions more helpful.

**F**INALLY, I wish to point out several definite suggestions which emerge from a study of the various factors included in a consideration of this entire problem:

1. That this Society sponsor a carefully conducted study of measures which may be pursued in the professional improvement of the football coach and other intercollegiate sport coaches.

2. That the college physical education departments which are now offering professional training courses, survey their programs in the light of what has been said.

3. That the Directors survey their own situations so that the football coach may be integrated into the entire program of physical education of their respective colleges.

4. That this Society study the advisability of the unification of the various bodies dealing with any aspect of physical education into one central organization.



# Intramural Relationships

By PROFESSOR E. D. MITCHELL  
*Director of Intramural Athletics, University of Michigan*

## Introduction

**I**NTRAMURAL athletics have rapidly become one of the traditions of student life at our colleges and universities. The spectacular side of intramurals has been their rapid growth. Once under way, the movement has gradually gained momentum which makes possible facilities and budgets which would have been deemed impossible no less than ten years ago. Much of the present day popularity is due to the generous revenues that have been provided from athletic profits, much of it is due to a wider following of supporters, but more likely most of it is due to the generous approval with which the general public and the school authorities view this phase of athletic sports.

During this period of rapid expansion, a number of outstanding changes have taken place in Intramural Athletics. In general, these changes have been concerned with the promotion of a wider variety of sports, with the development of adequate facilities, with the offering of skilled instruction on a student-wide scale, with an emphasis on informal as well as organized participation, and with the improvement in health requirements in connection with the competitions. In keeping with these developments, it is only natural that improved techniques should have been invented and successfully put into practice for the stimulation of student interest in physical exercise and for the successful administering of athletic programs including large numbers of participants.

## Scope of the Intramural Program

Today, the various departments of exercise are not set apart from each other by sharp cleavages but are overlapping in many ways. Therefore, the first approach to the subject of "Intramural Relationships" should be a clearly defined idea of the scope of the program. The general opinion of Intramural Athletics is that it is a program of athletics "within the walls" or boundaries of one particular school. This is the meaning which most intramural directors prefer.

The interpretation which limits intramural athletics to activities within one school has not, however, always been followed. A number of city directors, in filing reports of their school-boy activities, refer to certain competitions between various schools of the



city as intramural. Where grade or junior high school events are waged and the occasions are informal, with no admission charged, they use the word intramural. Yet at the same time, they refer to games between the high schools of the same city, where extensive publicity, crowds, and gate receipts are involved, as interscholastic competition. Is there any difference? It would seem not, unless the matter of admission prices determines the difference between interscholastic and intramural. From the standpoint that the competition is within the one city, there is some justification for referring to such competition as intramural; but on the other hand, the original usage of intramurals as within the walls of one school is lost.

In order to avoid this difficulty and to make their reports more clear, many directors are using an entirely new term to cover the inter-school competition of the elementary and junior high grades. Some refer to it as "extramural." Others use the word "inter-mural," giving the implication of competition between a number of schools that, taken together, have a unified system. The use of the former term is preferable and should be encouraged. The word "inter-mural" has so long been used wrongly to designate "intramural" that by now any attempt to distinguish between these two words would only be confusing to the layman. The word "extramural" is new and can be given the correct meaning. It also signifies a new type of competition which includes both varsity and intramural features.

The word "extramural" also has the advantage of satisfactorily covering the new type of competition found in Play Days or Sport Days—occasions on which a large number of teams and players from one school compete against teams and players similarly representative of another school. Sometimes the players are chosen on the basis of winning an intramural championship; other times teams are sent regardless of their previous intramural records. Two schools or a number of schools can compete in this fashion. With so many games and contests taking place at the same time there is but little spectator emphasis. This competition is not varsity because there is no emphasis on crowds or on the display of the highest skill attainable by careful coaching. Neither is it intramural, because it is outside the boundaries of one school. By far the best title for this purpose seems to be "extramural."

There is still another question which has become vexing because it involves the use of participation statistics. This is the habit of including squad competitions within the gymnasium class as intramural. It is true that many basketball and volley ball games are played in this manner and that track meets, tugs of war, Indian wrestles, rooster fights, novelty relays, and so on, are held. Nevertheless, the fact remains that these competitions are compulsory,

whereas the conception of intramurals has always been that they are extracurricular and voluntary.

At a recent intramural meeting in Chicago, an expression of feeling on this point was unanimous in favor of retaining the voluntary idea. This response showed that the directors had become weary of statistics which counted every person taking gymnasium work as having played intramural basketball, or having engaged in intramural track, as the case might be. If the word "intramural" must be used to designate the competitive activities of the new "day's order" in the gymnasium, it should be differentiated from voluntary intramurals by using the word "required." Thus the phrase "required intramurals" would give the proper meaning, as would also "intramurals in the gym class."

### **Tendencies in Intramural Relationships**

Intramurals are constantly growing closer to the required physical education program and to the varsity athletic program, as this paper will try to show. There is every evidence that these three phases of physical exercise will more and more be considered as parts of an integral and larger unity, and that past independence and rivalries will disappear as this closer working basis in interdependence takes place. It is therefore fitting that the subject of intramural athletics should be given this year an important place in the discussions of both the College Directors' Society and the National Collegiate Athletic Association.

#### **Relationship to the Physical Education Program**

In considering first, the relationship with the required physical education program, we find a situation in which the intramural movement has already been a factor making for significant changes. This influence of intramurals on the required program of exercises is evidenced in the following ways: (1) the teaching of the fundamental sport skills in mass formation in the class program; (2) the inclusion of squad athletic competitions as part of the gymnasium hour; (3) the encouragement of the elective sports program as satisfying part of the requirements. This changed gymnasium program has reacted beneficially upon the intramural program. Many students are introduced to certain sports for the first time in these classes and, enjoying them, get the incentive to enter into the intramural activities. Again, many students use the sports instruction in the gymnasium classes to advantage in their intramural play.

There are evidences to show that the intramural program is going to be bound up still more closely with the required work. Today, for the most part, colleges and universities have two years of required physical education. In many instances there is only one year.

While we, as directors, may have at one time enthusiastically advocated a compulsory four year program, it is becoming apparent to the practical common sense of many of us, that two years should be the maximum of our demands. While we may feel that physical exercise, from the standpoint of health, social relationships, and the enjoyment of participating, is absolutely essential, the conviction is growing, nevertheless, that if we cannot in two years make our program attractive enough to the students so that they will continue to exercise voluntarily the last two years, then we ourselves have failed somewhere to make the most of our opportunities. We must remember that when these students graduate, there will be no form of compulsion to make them exercise, and the merit in the plan of allowing them voluntary recreations in the last two years of college life is that it will give them a better adjustment for the situation they will find in business and professional life.

The increasing attention given to physical education in the high schools, where a four-year requirement is becoming the universal rule, means that many gymnastic and athletic skills formerly taught to students for the first time in colleges, are now receiving attention earlier. The new health education of the high school curriculum gives knowledge that formerly was offered for college credit. Consequently, we may expect our college students to come to us more advanced in health and recreative knowledge than has been the case heretofore.

The resignation on our part, whether willingly or unwillingly, to a maximum two-year program, is bound to affect the relationship between the required and intramural programs. It will throw the burden upon the intramural departments of furnishing more and better exercise to the upper class students. It will mean that the physical education curriculum of the *first* year will offer a generalized program of activity for all students alike, the purpose of which is to acquaint them with all the approved forms of exercise so that they may acquire the beginning of favorite likings. It will mean that the physical education curriculum of the *second* year, assuming that likings have been formed and individual differences have been considered, will offer a selective list of sports that have "carry over" values. Furthermore, it should be possible for a certain amount of intramural participation to be substituted for some of the requirements of the second year—for at least one of the three periods, assuming that three periods a week are required. Such substitution would be justified on the basis that actual exercise is obtained and also because it should be one of the functions of the second year program to stimulate the habit of voluntary participation.

Such a plan as the one outlined makes no favoritism between the gymnastic and sport activities, as the student would be introduced

to all the forms of exercise and he himself would then decide which he preferred to pursue. Individual differences would thus be considered and there would be equal opportunity to go on and excel in any phase of activity the student might select.

In this apparent willingness to accept the two year requirement as adequate, there are certain reservations. The physical education department should have the right to insist on compulsory attendance at prescribed individual programs of exercise for those upper class students who are physically deficient but for whom improvement is possible. Then, too, by all means, physical directors should continue to strive for positive credit for physical education work.

The matter of credit is so very important that a number of physical education leaders are promoting the idea of elective physical education courses for credit in preference to required courses without credit. This new plan has a number of desirable features. It removes the objection of compulsory attendance; it is very elastic in permitting arrangements for the semesters and the hours of participation; it reaches students during the four years of college instead of during one or two years as at present; and it makes physical education a part of the four year curriculum and not a special subject. Insofar as the colleges are concerned, this plan should receive careful consideration.

A few other comments may be worth making. If credit is to be insisted upon, it is obligatory upon the physical education department to give a truly educational program, one that is helpful to the student, and has meaning for him. Moreover, it is essential that the students should be graded properly according to their accomplishments.

To supplement the two year required program it would be necessary to promote a more attractive intramural program than ever, since Junior and Senior students would be free from any requirements in the way of exercise and would have to be attracted voluntarily. It would therefore be incumbent upon the intramural program to assume the responsibility for the exercise of upperclassmen and this would mean not only spirited leagues and tournaments, but also ample opportunity for regular participation in unorganized sport. In addition, it would be desirable to offer intensive voluntary courses of instruction in the popular gymnastic and sport activities. These should be available for those students who have found favorite recreations as a result of their experiences in the first and second year required programs, and who wished to gain a high degree of proficiency in them. The addition of such advanced courses would tend to bring the varsity coaches into close touch with this educational program, as they would be called upon to give classes in their own specialties.

Another development is possible in connection with elective credit

courses. This is a so-called "appreciation course" paralleling the appreciation courses in art, music, and literature. It would attempt to give an understanding of many activities both from the player and spectator standpoint. The student would become acquainted with the knowledge best needed to appreciate football as a spectacle and would understand the game without the necessity of loud horns to explain it mechanically to him. The student would understand the different forms of the dance so that he could appreciate the exhibitions of the world's best performers; he would understand something of the etiquette as well as a playing appreciation that goes with the more social sports of golf, tennis, swimming and others. Such understanding would make for more enjoyment of leisure and better standards of sportsmanship.

#### Relationship to the Varsity Program

In turning to the relation between the intramural and varsity departments, we find just as important developments in the way of cooperation taking place.

As mentioned before, intramural athletics are at their best when working in conjunction with the varsity program and not when working as a program apart. The varsity teams, especially in the newer sports, profit by the material uncovered in the intramural competition; and the intramural men are spurred on to their best efforts when a possible promotion to the varsity squad is before them and when a varsity coach lends the prestige of his position to an appreciated assistance with the intramural candidates.

Whereas the varsity system deals with the intensive training of a few and brings them to the peak of perfection, the intramural system spreads out more thinly to take in a wider circle. Consequently, the secret of intramural success lies in organization methods. Another difference lies in the fact that the varsity must have uniform rules between schools whereas the intramural programs may differ widely at different institutions according to local traditions, facilities, and needs.

Today, there are many evidences that these two programs of physical exercise—varsity and intramural—are growing even closer in their aims and activities. There is an old adage from philosophy that "extremes meet," and such a trend seems to be going on between varsity and intramural. The varsity, from its former concentration on a few athletes, has greatly broadened its scope to include a much wider variety of sports and a larger number of men in those sports and has used classifying methods to procure more teams to represent a sport—thus employing an intramural idea. The varsity has also lessened the burdens of training regulations by shorter hours of practice, by smaller encroachments on the study periods, and by



introducing more of the game spirit into the Monday and Friday practices. The general process has been somewhat pronounced toward emphasizing recreation as well as technique.

When, on the other hand, we turn to intramurals, we find the reverse process taking place. Simply expressed, this means that the advantages of skilled instruction and of play with better equipment and facilities are being placed before the intramural candidates. Previously, the mere opportunity to exercise on a playing field or indoor court was considered sufficient, and there the department's responsibility ended. Today, however, the intramural players enjoy much better facilities, much better equipment, and far more instruction. Formerly the varsity monopolized the playing facilities but today there are either separate intramural facilities or the varsity coaches find a way to enlarge the squads they handle. Today, though still inheriting the second-hand basket balls of the varsity, the intramural department sees to it that the balls still have play left in them and that the bladders are not bursting through the seams. It was a kindly but pertinent rebuke when two intramural teams, on finding a new basketball for their game, gave voice to a lusty cheer.

This tendency to encroach on each other's territory—for the varsity to adopt a greater number of sports originally promoted by the intramural department, and for the intramural department to enlist the aid of the varsity coaches to give instruction to intramural athletes—has been accentuated by a new tendency to use the intramural competition as a basis for the selection of representative teams. This new experiment will not, of course, be found in the case of the older and strongly entrenched varsity sports which have crowd-drawing and financial value. Nor for some time is it to be expected that it will affect the status of the newer sports already on the varsity program. But it is likely that, in time, the varsity departments, already burdened with the support of a large number of non-paying sports and with lessened gate receipts making this problem more acute, will give sympathetic heed to this new kind of varsity competition.

There promises then to be three types of athletic competition in the future. The first is the varsity as we now know it, with its traditional prestige and popularity, featuring the major sports of football, baseball, basketball, and track. The varsity emphasis will be frankly on the sports that pay—primarily because in colleges the whole athletic program, with but few exceptions, rests on the money thus provided. In the writer's opinion the traditional varsity sports, for this reason, are going to accentuate their "varsityness." An additional factor working to this end is that these sports, with the exception of basketball, have been tried in the intramural program and found unsuitable in their original forms. At present they are



played in intramurals in a modified form such as tag football, soft baseball, and track pentathlons in which the effort is to win points in *many* events rather than to excel in only one. Basketball alone of all the major sports has become more popular than ever in intramural circles, but this is because of its inexpensiveness and the enjoyment it offers when played scrub. Even so, however, there is as much difference as day and night between the game as played by the intramural teams and the systematized play of the varsity.

If, however, the varsity does come to feature certain of its money-raising sports more than ever and tends to lessen the size of the squads and schedules of the sports that are not self-supporting, this does not necessarily mean a neglect of the latter sports. Rather it is to be assumed that there will evolve a tendency to stage more intramural competition in the form of home meets and tournaments between well matched candidates, and possibly to charge small admission fees for these occasions. This future may be in store for the sports of swimming, tennis, wrestling, fencing, hockey, golf, soccer, gymnastics, and cross country. Such a solution would be preferable to the course followed by some schools of entirely abandoning the varsity schedules in these sports in order to effect economies. For the most part these are the sports that have large recreative carry-over value, and it is extremely fitting and urgent that they be promoted to the fullest extent both as varsity and as intramural sports.

There still remains the discussion of a third type of sport which so far has been intramural only. A partial list of such sports would include handball, squash, volleyball, bowling, badminton, archery, and yes, even horseshoe pitching. It is quite possible that the superior players among these sports may request a varsity rating. Except for the financial problem of supporting additional varsity sports, these would be just as justified for varsity rating as many of those already accepted. In fact, the probable trend of intense varsity competition between colleges will probably be based upon the ability for self-support.

In such an event, those sports that are unable to pay for a full schedule of trips will have to evolve some less expensive means of representation between colleges. We may find here the experiment of extramural competition. Rules for this new type of varsity representation will need to be formulated, probably as the result of actual trial, but this type of competition would solve many financial problems as well as introduce many socializing features. In this type of varsity competition, the school representatives would be chosen from a highly motivated intramural process of selection. Then the intramural champions, in handball, for instance, could meet at some one college and play off a tournament to select the

winner of the conference (or group of schools) for that sport. Another school in the group could be chosen to hold the tournament for a different sport. In this way, each member of the group of schools would serve as host to all members of the athletic conference in some sport and yet the expense of many dual meets between schools to determine a championship would be avoided.

None of the so-called minor sports are too strenuous to prevent an elimination series lasting two days or so. Thus the champion players of a conference could be decided in a short manner and the outstanding players of each school would have had their reward in deserved opportunity for outside competition. Intensive intramural meets would take the place of dual meets between schools. In the case of colleges that do not belong to a conference, there would be opportunity to carry out this idea in a somewhat different way—namely, to build up an extramural program with traditional rivals in which selected individuals and teams in many different sports would journey to another school for an extended dual meet. This sports day could settle many play-offs at one time and the occasion could be made a friendly get-together of traditional rivals. The occasion might well be terminated by a banquet for all the participants.

To sum up this discussion of the relationships between the intramural and varsity departments, it may be re-emphasized that there are three possibilities for the future growth of athletic competition. The traditional so-called major sports may become almost exclusively varsity in nature; the newer recreational sports may lose some of their varsity emphasis but at the same time receive much more intensive intramural promotion; and many sports which previously have been classified as intramural only, may also begin to receive a varsity emphasis through the medium of extramural sport days.

#### Other Relationships

##### *Teacher-Training Department.*

This paper has shown the intramural relationships with the required program and with the varsity program. There is another relationship which is new but rapidly growing. This is with the teacher-training department. The intramural program of activities offers an excellent chance for practice teaching. The specializing physical education student, working under the direction of the intramural staff, can be assigned to officiate games, to draw up schedules, to run off meets, to organize teams, to coach teams, to credit points on participation charts, to give out and check in equipment, to write a sport story for the school paper, and to perform in many other capacities of distinct usefulness both to himself and to the intramural department. At the University of Michigan we have definitely

assigned one member of the intramural staff to supervise the activities of the practice-teaching students. In order to prevent the old hit-or-miss method of assigning such students to their duties, a mimeographed schedule of requirements has been drawn up distributing the total number of hours expected of them. As these specific duties are performed, the student is given corresponding credit on his chart. In this way he covers the entire scope of the intramural program and gets experience in all the varied duties of the work instead of spending all his time on one thing, such as officiating or coaching or office work, as was previously the case. The students appreciate this definitely worked out schedule, and it is effective in the same way that a well-planned gymnasium class program is superior to the one in which the instructor depends on a last moment choice.

#### *Health Service.*

For some time the Intramural Department has been obtaining a closer working relationship with the Health Service. Both are concerned with the health of the students. The Intramural Department feels a particular responsibility for the physical welfare of the participants in its program; and has therefore in recent years insisted upon stricter requirements in the way of physical examinations and preliminary training. The cooperation of the Health Service has been needed in carrying out these progressive policies and the examination of the many hundreds of intramural candidates is no small task. Nevertheless, the task has been attempted, and practically all intramural athletes are now being examined and being given "Health Cards" when they pass the tests. These cards must be shown before the meets and games as a prerequisite to the bearers being included in the line-ups. Working with the Health Service the intramural authorities have also been insured prompt and efficient service for such injuries as may occur in strenuous athletic exertion. In keeping with this closer supervision over the physical welfare of the participants, less emphasis is being placed on striving for large entry lists in the more exacting sports. Instead, entry limitations have been made to curtail participation on the part of untrained players. Besides these provisions, medical service is arranged for during the hours of organized competition. In these ways, and also in the way of spreading health knowledge and in supervising the sanitation of the swimming pool, the Health Service renders invaluable assistance to the sports program.

#### *Faculty.*

The Intramural Department owes, of course, its first obligations to the student body, but these provided, the recreational needs of the faculty should be studied and met. Where sport facilities in the

way of golf, tennis, swimming, volleyball, handball, squash, and badminton, are provided, a larger number of the faculty members will turn out than would off-hand be expected. Many will become regular devotees of exercise, and this closer contact with the intramural program will be of help to the department as well as to themselves. Their chances to observe the many and varied leisure activities of the students will build up a favorable impression of the value of the sports program. This good will, brought about through the friendly rivalry with their associates and the contact with youthful enthusiasm, is well worth cultivating.

#### *General Student Body.*

In conclusion, we should make mention of probably the most important relationship of all, that to the student body which the intramural program is striving to serve. Possibly this relationship is so well understood that it does not need to be discussed in full. It goes, of course, without saying that the intramural department is dependent upon the good will and whole-hearted response of the students for its success and growth. In return, the department owes it to the students to keep in close touch with their needs and insofar as possible satisfy them. It even owes it to the students to exercise the authority of mature judgment when excessive student enthusiasms in exercise would run counter to their own best interests.

To a reasonable degree the rights of each student to personal preferences in recreation should be considered. It should be remembered, too, that the leisure time of students is a time for self-expression and relaxation and, therefore, should be as free from rules and restrictions as is compatible with the best interests of all.

The values of intramural athletics are many. In addition to the health and leisure-time values, so well known, intramural athletics produces many intangibles in the way of wide and democratic social contacts and the making of valued friendships. The team attachments, too, have their place in training the more sturdy qualities that come from loyalty to a group, self sacrifice to a common aim, and the sharing of adversity or success as the case may be.

Lastly, it should be borne in mind that our program should not be static but should be constantly evolving in keeping with the new needs and wants of the students. Just at the present moment, too, we must be prepared to assume extra burdens at a time when other departments are curtailing their work in the face of the depression. There is no depression in the work of the intramural department for, with less money to spend, the students are relying upon it to supply their needs in recreation. We have the opportunity to accomplish not only a temporary good but a lasting one.

# Intramural Athletics in Small Colleges

By EDGAR FAUVER, M.D.

*Director of Health and Physical Education, Wesleyan University*

I SUSPECT that the proper title for this paper should be "Rambling Comments by an Old Man." I question the appropriateness of my appearing on this program to discuss before a group primarily interested in intramural athletics the principles which should guide the development of an intramural program. My work, as some of you know, has not been primarily in intramural athletics, although I have been very much interested in them as a means of physical education and recreation for the mass of students for many years. Nevertheless I have made no exhaustive study of the many systems in operation, and my major work in the development of an intramural athletic program at my own college was done more than twenty years ago, and at that time there were no intramural systems operating in the east, and none on a very extensive scale with which I was familiar in the west.

I owe my first serious interest in intramural athletics to the teaching of Dr. Thomas D. Wood of Teachers College, Columbia University, with whom I was associated for many years. He insisted on every and all occasions that while a system of physical education centering around gymnastics and apparatus work might provide for the minimum of exercise which would satisfy the physiological needs of the body, gymnastics after all should be regarded as medicine, and should be applied as any other therapeutic procedure in the alleviation of pathological conditions, but that for the well and vigorous, a more natural form of exercise was indicated. The farther I went in the field of physical education, the more thoroughly convinced I became of the soundness of this point of view. And so on going to Wesleyan, I at once began the development of an intramural system. I speak from a close contact with this system at Wesleyan only, and, as I have said, not with a complete knowledge of what is being done in other institutions. My comments therefore are perhaps more applicable to relatively small colleges than to the larger ones and may be very elementary and of little general value.

## The Objectives of the Program.

In the establishment of an intramural program at any institution, one should, it seems to me, have definitely fixed in mind, the objectives of such a program. Where programs in intramural athletics



have failed or are not successful, I am sure this is so for one of two reasons. First, the underlying reason in most cases has been the fact that the real objectives of such a program have not been clearly thought out and appreciated; and second, there has been little or no enthusiasm for attaining these objectives on the part of those primarily concerned with the work. There should be at the beginning a thoroughly thought out plan for attaining the predetermined objectives.

While there are many objectives which can be set down for intramural athletics, to my mind they are all secondary to one, and all results except the attainment of this primary objective should be regarded as by-products, perhaps worthy in themselves, but not of sufficient value to justify a program. The one and only justifiable reason, it seems to me, for the development of intramural athletics, is the physical education and recreation of the mass of students through vigorous athletic exercise. I do not care to go into a discussion of what the objectives of physical education are, but leave that to you to decide. If, however, a program of intramural athletics does not look forward to the training of the great majority of the students by means of a vigorous system of physical activity, but simply continues the training of those already fairly experienced athletes, it is not a real program, and the chances are that there is some other objective in view. The objective of an intramural program is not the determination of a championship in any particular sport, although this may be the primary motive for some students taking part, nor is the accumulation of great quantities of statistics to prove that one hundred percent of the men actually take part in them a real objective, although one might gather the impression at times that these statistics were the primary reason for carrying on intramural athletics instead of the training of those engaging in them.

The establishment, therefore, of an intramural system involves the combining into a system a variety of activities, some to be of an individual nature, others to involve groups, but all to provide a ready and accessible means for the mass of students to secure recreation, with all that that means, and physical education from participating in them.

The by-products of a well organized program will be many, and will differ with the institution. Should we attempt to list these, I would place among the first the provision for the leisure time of the student, not only his present leisure time, of which he has too much in many institutions, but his future leisure time when he is no longer a student, and of which he may have more. We therefore should have this clearly in mind and not concentrate excessively upon those games which have no particular carry-over value. I know full well how an intramural athletic program is capable of



making over to no small degree college life. I do not claim by any means, however, all the credit for intramural athletics for the great change in the life of undergraduates that has come about in the last fifteen or twenty years. But certainly the average undergraduate in any institution where there is an adequate intramural system no longer spends his time on the bleachers watching a highly-trained group play a game, and in giving the occasional rah-rah to stimulate them to greater endeavor, or in wandering aimlessly through the streets of the town thinking up student pranks to bring notoriety to the institution and trouble to the city fathers. At the present time the student's leisure hours are apt to be spent to a considerable extent as a member of a team or in active enjoyment of an individual sport. Certainly the provision for the leisure time of undergraduates is a worth-while by-product of an intramural system. We should also keep in mind the needs of the individual as he leaves college. Perhaps no subject connected with education is receiving more consideration at the present time than this matter of leisure hours, and a physical education program should make its contribution to the solution of the problem, although far be it from me to suggest that only physical recreational activities should command the attention of college men after they leave college, even though this is altogether too often the case.

Very frequently intramurals have been attempted in colleges primarily for the training of those who will eventually become members of the college intercollegiate teams. Certainly no one has a better reason than myself for appreciation of the fact that intramural athletics, properly conducted, has trained successfully in past years players for varsity teams. I saw in the early years of my interest in athletics, many a man make the basketball or football team, or even the baseball team, whose only previous training had been on intramural teams. I have seen in my own institution three or four men on the same football team who had never even attempted to play football before coming to college, and have known of basketball teams, successful even by our low standards of judging success, with two of the five men playing with no previous experience before coming to college, all having been trained through an intramural system. We have in our own institution made up varsity teams at the end of an intramural season to participate with other colleges in intercollegiate contests, and these teams have competed successfully.

Conditions, however, have changed in the past few years, so that this is not a very potent factor or reason for the justification of intramural athletics, in any institution. No longer does a man untrained in high school or preparatory school make one of the intercollegiate major teams in our colleges. Varsity men all come

in with from one to five years of experience on secondary school teams. However, it seems to me that the training of men for varsity teams, even if valuable, must be lost sight of completely in the development of an intramural program, for while it may be a factor stimulating some individual athletes to participate in intercollegiate athletics, it is of little value otherwise. Once an institution attempts to make the primary objective of an intramural system the training of varsity players, it will certainly lose sight of the real objective. I have known of one or two colleges where there have been attempts to develop intramural programs which conducted all their intramural basketball games before the Christmas season. By so doing the varsity coach was able to select out the most promising candidates for his varsity basketball team. Under such a system no time was given to practice for the development of the players. Such a system becomes a matter of the survival of the fittest. The same thing is frequently seen in the early spring days when the track coaches are attempting to select men for the track team who have possibilities for track work due to natural inheritance, or in swimming before the start of the varsity season. Under such a system players are permitted to compete long before they have had a training sufficient to develop physical condition for the games. In the second place, the schedule of intramural games is not prolonged over a sufficient length of time to be of any value in maintaining interest and in developing skills to justify it.

One of the most important by-products, it seems to me, is the development of a closer group spirit on the part of the units taking part in intramural athletics, and more friendly intergroup spirit, and this perhaps is a very legitimate by-product.

#### **Importance of a Fair Distribution of Time and Equipment.**

If I am right, then, in feeling that the real objective of an intramural program is the training of the great majority of undergraduates, it naturally follows that the intramural system should be the most important part of a Physical Education program. If this is so, intramural athletics must be given a most favorable time on the program, and the adequate use of the equipment. Nothing should be allowed to interfere with the games scheduled. Of course it is true that not all colleges, and perhaps not any, have all the equipment necessary for carrying on intercollegiate as well as intramural athletics as they would like, and therefore are unable to give to both intercollegiate and intramural athletics the best time for practice, but certainly if intercollegiate athletics makes use of the equipment at all hours when it normally could be used by the mass of students, one cannot expect to develop an intramural program.

Most of us who have been through the battle know from hard

experience the demands made and the many arguments presented, as to why the gymnasium should be used by the varsity basketball team for practice in the afternoons, and as a consequence why the intramural teams should play at night. In swimming, we know the argument that the pool must be used at the convenience of the varsity coach for practice by the varsity team. We must I suppose for the time being be reconciled to the use of the best equipment and the most favorable hours by those highly trained experts on the intercollegiate teams. How long this will continue remains to be seen, but in some colleges there is a growing belief that intramural athletics are of equal importance to intercollegiate athletics. I predict a failure of the intramural program in the majority of cases if there is not a fair distribution of time and equipment.

It seems to me that it is only by getting the whole-hearted cooperation of the whole physical education staff, including the intercollegiate sport coaches, and maintaining the rights and privileges of the intramural program, that interest can and will be maintained. I cannot too strongly emphasize this point, namely, that the intramural program must be given a most favorable place on the schedule if interest is to be aroused and sustained, and when once a schedule of games is published, no varsity activity should be allowed often to interfere with the running off of the intramural schedule.

### **Sports to Be Incorporated in a Program.**

Naturally the sports to be incorporated in a program will differ with the institutions and equipment. I believe that Hetherington correctly states the case in a general way when he says, "Physical training activities must be selected according to the natural adaptation to the incentives and needs of each age period." For boys and young men I feel strongly that the sports selected should have the following characteristics at least.

1. They must be vigorous. I believe, although I have no scientific facts to support the argument, that it is unfortunate that so many of the young men of the present generation come to, I was going to say maturity, but at least to adult life, without knowing the delightful sensation of honest sweat as a result of vigorous physical activity, without even having their organs of circulation and respiration come under any greater strain than that resulting from a stationary run in a gymnastic class or the endurance of a junior prom. This is one of the reasons why I do not encourage our students to take up golf early in their college course. Golf is a good game for an adult and for one who can devote his entire afternoon to the sport. It is not sufficiently vigorous to my mind to produce the desired physiological results on the general muscular system and therefore upon the vital organs when played by a high school or

college man for an hour three times a week. The pitching of horse-shoes has never appealed to me as a real intramural sport. It is not vigorous enough, it seems to me, to justify the time spent on it except for special sub-normal groups.

2. The types chosen must be those that make an appeal to the student. There is no reason for trying to force certain games. It is difficult to tell just what sports will appeal. Frequently this will depend upon the enthusiasm of the instructor in charge. For instance, I have never been able to create any enthusiasm for volley ball as an intramural sport. It is a good game. When well played it is vigorous and calls into play not only individual skill and agility, but team work of a low order. I believe that the reason for this failure is that I have never had anyone on the staff of the Department who really believed in the game and who had played it sufficiently well to transfer his enthusiasm and technique to the players, or else other sports made a greater appeal to the boys. Frequently a sport appeals because it is a sport which the public enjoys. As a matter of fact, baseball is to my mind the poorest possible intramural sport, and yet it is the most popular. In this game there is so much time when seven of the defensive and eight of the offensive team are doing nothing, that I cannot justify the game as an intramural sport, although fine coordinations and courage are required to play this game successfully. I say this after years of experience, for as a college undergraduate as well as a member of several high-grade professional teams I played baseball for years.

3. A fair proportion of the sports making up an intramural program should be sports that can be played after the individual has left college and taken up his life work. Of course, many of the sports are of a nature that makes the playing of them in later life impossible. We have, however, worked out at Wesleyan a system of physical education which trains every student in one out-of-door sport and two indoor sports which he can continue until advanced age, and every student takes part in these sports.

4. The sports should offer a sufficient variety to provide for all, and for that reason should not all require a high degree of team play and a large number to participate in them. Some should be individual sports.

#### Administration.

In the administration of an intramural program it is advisable to give to the undergraduate as much responsibility as he will carry successfully. One should keep in mind, however, that the objective of an intramural program is to give physical training to a great number of students and not to give a smattering of administrative experience to a selected few. One should keep in mind also that experience is a great teacher, and that in the passing of years a

department of physical education will accumulate much information which will make for efficiency in the running off of an intramural program which no undergraduate can possibly possess. While the department should be primarily responsible, it is advisable in one way or another to tie up the undergraduate body to the administration of this program. In order to do this there should be a somewhat formal organization recognizing the undergraduates.

This may be accomplished by means of an intramural athletic council with a written constitution which gives particular consideration to the matter of eligibility. This council should be composed of one representative of each organization or division taking part, to be chosen by the organization, and at least one member of the physical education department. No stated times for meetings need be set, but one meeting should be held each fall to talk over the program of sports for the coming year. This meeting should decide what sports are to be admitted to the list of the officially recognized sports in addition to those definitely recognized by the constitution. It is right here that a good deal of wisdom and tact must be displayed by the department of physical education, for the initiative for most of the progress along this line must come from the department. At Wesleyan we find it necessary to develop an interest which is pretty general in a new sport before it will be accepted by the council.

It is quite possible in a small college to train competitors for the managership of intercollegiate teams through active assistance in the managership of intramural teams. With us all the competitors for the assistant managership are assigned to arrange the details of certain of the intramural games. In basketball, for example, they are held responsible for notifying teams which are to play, for the selection of officials, for keeping the score and the time, and for making accurate reports on such matters. I can think of no training better than this in preparing these men for duties as managers of intercollegiate teams. This plan has the additional value of creating a lasting interest and respect for intramural athletics on the part of undergraduates who are to be in the future most influential in the management of intercollegiate athletics.

Speaking now of the smaller colleges, I can see no reason for a special man on the staff whose primary responsibility will be the administration of an intramural program. Personally I think the best results are obtained when all the members of the staff share the responsibility. Thus all become interested in the program. At Wesleyan the responsibility is divided by asking the intercollegiate coach to assume responsibility for the intramural sport corresponding to the one he coaches. To illustrate, our basketball coach assists the intramural sport manager in developing a basketball schedule, talks with him about eligibility and protests, and while not at all compul-



sory, has seen in years past the vast majority of the games played. The same is true of wrestling, and swimming, and in those sports where we have no coach, such as handball, the man in the department who is best qualified to look after them, is asked to cooperate with the undergraduate manager. The result of this is a more enthusiastic appreciation of the value of intramural athletics than is the case where only one man in the department is responsible, and the other members of the staff tend to look upon the interference by the intramural teams as an unmitigated nuisance. Thus with the department of physical education keenly interested and active in the management of intramural athletics, with the intercollegiate coaches sharing in the management and the conduct of intramurals, and with the undergraduate competitors for managerships of intercollegiate teams active in their management, there is with us a far more general and enthusiastic appreciation of intramural athletics than would be the case if these were isolated and conducted as a separate activity. Our experience, of course, is that of the small college.

#### Provision for Practice.

I think that in general no activity should be put on the program unless facilities for practice are provided. It is reasonable to believe that a man who has had no preliminary practice and plays one game during the intramural basketball season, may be harmed a great deal more than he is benefited by the game, although he may add his name to the list of those who have taken part in intramural athletics and count quite as much as a man who has played regularly throughout the season in making up the usual statistics of intramural participation.

It is quite possible, I think, to tie up physical education classes with preparation for intramural athletics, and thus possibly make these classes more interesting. Especially is this true in small colleges where classes are small. With us physical education is required for three years. Classes are all of an athletic nature. For instance, there are a number of sections of basketball taught by the varsity and freshman coaches in addition to the varsity and freshman squads. These sections receive approximately the same sort of instruction, only in a milder form, as the varsity teams. A given section may be composed of men from three or four classes in college, and from many fraternities, graded somewhat as to their ability. In these sections they learn the fundamentals of basketball, they play practice games two or three times a week, and these are the men that form to a considerable extent the intramural basketball teams. Frequently the teams representing the various sections come together for a small tournament of their own. The same is true in handball and tennis, where we have a large number of sections in charge of instructors. Each section has about twenty-five men. The men in



a given section play an individual round robin tournament within the section, and then the champions of the sections frequently have contests to determine the section championship. In addition these men may be the representatives of the fraternities in intramural handball. Thus we plan definitely to work down the list in the matter of competition, so that the poorest players in college have some competition of a more formal nature than that which takes place in the ordinary athletic section, and this ties up the physical education classes directly with intramural athletics. We do not as a rule excuse men from the physical education classes to participate in intramural groups. However our required work in physical education except on varsity teams is over before the intramural games begin at 3:30 p. m.

### **Health Supervision.**

For many years all colleges have required fairly thorough medical and physical examinations of men who compete for membership on intercollegiate teams. It is quite possible that competition on many of the intramural teams taxes more severely the strength and vitality of the many intramural players than do the intercollegiate sports tax the strength and vitality of members of the varsity teams. For it is true that in general the more highly trained and vigorous type of men go out for the intercollegiate teams, whereas in the intramurals men of all degrees of physical condition take part. It would seem to me, therefore, only reasonable that every man in college should have a physical examination each year, or at least every one who anticipates engaging in intramural athletics, and because of the fact that so many do engage in these activities where the system is at all well developed, it would be far better to examine all each year.

This examination does not need to be quite as thorough as that for the intercollegiate team members, although it is regrettable when it is not. But certainly there should be a test of the condition of the heart, and there should be an examination of the urine to determine whether there is any evidence of kidney degeneration or whether there is sugar which would indicate diabetic tendency. Naturally at the same time there should be an examination to determine whether there is present hernia or any other form of weakness, and there should be a comparison of weight with that of previous years as a rough test of physical condition. I cannot help but feel that the neglect of thus safeguarding the health of the intramural players is regrettable.

### **Officials.**

Officials are absolutely necessary to successful carrying out of an intramural program. While the department should stand ready to assist in the provision of these officials, and occasionally take

charge of games, the burden of course would be too heavy to make this a daily practice. I feel, however, that an occasional refereeing of a basketball game, or umpiring of baseball by a member of the department is worth while, first, because it shows an interest which is appreciated by the undergraduates, and second, it may demonstrate how officiating can best be done. In general, however, officials for each sport should come from among the undergraduates. Therefore a list of student officials for each sport should be drawn up before the start of the season of play, and all officials be selected from this list. These naturally would be men who had had previous experience in playing the game, but it does not necessarily follow that some of the best officials are not those who have never been successful as players. These men should be trained by quizzes on rules and by criticism of their work, preferably given by the head coach of the sport, and in other ways. It seems reasonable that these men should be paid a small fee, perhaps fifty cents, a game. The amount of money involved is not great, but it is sufficient to encourage certain men to take an interest in doing the work well and to meet their engagements. Personally I do not feel that this should make them professionals so far as competition in college is concerned.

#### Schedules.

The ideal schedule is the round robin. This makes it possible for each team to play every other team and it prolongs the season. Of course it may not be possible to play round robins in all sports, due to lack of facilities. In such cases it may be necessary to divide the players into leagues and let each league play a round robin tournament, and then let the winners of the leagues come together for the championship. Schedules arranged as elimination tournaments are undesirable. In general the schedule should be made out under the supervision of the department of physical education. In making out the schedule I think that it is sometimes rather important to have a fraternity or other organization scheduled in two or more sports in the same afternoon. This makes it impossible for the same men to engage in three or four sports.

In arranging an intramural schedule, the following considerations should be kept in mind. First, a schedule to be worth while must provide for fairly frequent games or matches for each team. If not, interest will lag, and the individual players will not keep in condition for the sport. Second, sufficient divisions of the student body should be included to provide opportunity for competition for a great many. Third, the schedules should extend over a considerable period of time, and thus make it possible for interest among the competitors to grow and for men to continue in a sport for a long period. Fourth, frequently the contestants should be seeded. In this way a good

forecaster will arrange to have the strongest teams come together at the end of the schedule. Fifth, if leagues are formed, all the strong teams should not be placed in one league if there is a desire to determine a championship.

#### **Finances.**

The matter of financing intramural athletics has never been a serious one in my mind. The matter of permanent equipment is serious, but much of this equipment in colleges for both intramural and intercollegiate athletics has been built at college expense and should therefore be shared by both. Granting a reasonable equipment in the way of gymnasium, athletic field, courts, etc., I am inclined to believe that intramural athletics can be conducted satisfactorily for \$1 per student. This of course would not be possible if an intramural director was appointed who devoted his whole time to the work. But it is sufficient in our institution to carry on a fairly complete system, and to provide for such general equipment as baseballs, catchers' equipment, basketballs, footballs, etc., and in some of the more vigorous sports such as football to provide shoes and pads, etc. In most of the other sports, however, I think it is reasonable to have each man provide his own equipment.

#### **Stimulation of Interest.**

I think it is well appreciated that the average undergraduate is far more willing to engage in play, if an opportunity is provided, than to remain in his room devoting his time to study. Nevertheless in conducting an intramural plan, we are dealing not with individuals but with groups, and therefore it may be wise to appeal to group interest and pride by offering trophies to the winners of championships. I am heartily opposed, however, to making these prizes of any great intrinsic value, and I cannot reconcile myself to the giving of many individual prizes. It seems to me that there ought to be sufficient reward to the individual in the joy and satisfaction which comes to him of playing through a season of hard play, to make unnecessary the award of individual prizes.

In conclusion, I feel that intramural athletics should be regarded as possibly the most important part of a physical education program, and as such should provide for the great majority of undergraduates. The intramural system then merits the interest of all members of the staff, including the director, coaches, and instructors.

# The Inter-Relationship of Physical Education, Intramural and Intercollegiate Athletics

By J. H. NICHOLS, M.D.

*Director of Intramural Athletics, Oberlin College*

AT the outset let me say that I certainly hope to avoid giving any impression that my ideas and opinions, as expressed, would necessarily apply to your situation and conditions. However, I do hope they may provoke some thought and discussion along the lines raised. In order to discuss this question, it is necessary to state briefly what I consider the purpose and function of each division to be—(I am not attempting to discuss the aims and objectives of Physical Education). If we can agree as to the function of each division, we will be in a better position to judge as to whether they should be related and what these relationships should be.

First, as to the function of the physical education division. For purposes of this paper I am limiting my discussion to the physical activity phases of the program. Physical education is often defined as the contribution made to the complete education of the individual through psychomotor or large muscle activities. In simple English, this means that the physical education division is responsible for the physical activities in the school program.

However, considering physical education in the light of the other phases of the department's program in a college or university, I believe its function should be the teaching of skills and knowledge of various activities adapted, as far as possible, to the physical needs and abilities of the individual, graded and progressive in character and required of all students for at least two years under present conditions. As shown by studies of participation we certainly have not reached a point as yet where intramurals can take the place of the required program. It is impossible to provide sufficient periods unless it is a required elective program in intramurals. This teaching program should be progressive and inclusive, covering not only the game skills and coordinations necessary for participation in and enjoyment of intramural sports for which it can be and should be the foundation on which we build, but also including activities planned to develop organic vigor and strength in those individuals who are physically deficient and who, because of this deficiency, are

unable to take part successfully in most sports. If this work is well and efficiently done, not only will many more students develop interests and skills that carry them on into intramural activities, but they will derive much more pleasure and enjoyment from their participation because of a better knowledge of and skill in the sport.

In many institutions today, where a broad and progressive teaching program in sports is being carried on in the physical education classes, there has been a great increase in the intramural interest and participation in these sports as a result. This interest carries right on through to the top, and in many of the minor sports, such as in fencing, soccer, speedball, wrestling, swimming, gymnastics, polo, hockey, etc., the development of intramural and later intercollegiate teams and interest is the result of the elementary and fundamental instruction given in the required physical education classes. I could cite many examples of this. This is especially true of the activities that are not usually included in high school physical education programs, such as handball, squash, tennis, boxing, wrestling, fencing, volleyball, speedball, soccer, hockey, polo, etc.

At Ohio State University, for example, where I happen to be familiar with the physical education and intramural programs and their inter-locking relationships, more than thirteen of the sports included in the intramural program were being taught in the physical education courses three years ago, and no doubt this number has been greatly increased since. At Oberlin, which represents a different type of institution and a different physical education organization, eight of the sports included in the intramural program are taught in the physical education classes.

This logical and important coordination works both ways to the benefit and strengthening of the work of each division. The student quickly realizes that he will have opportunity to try out his new skills and interests in a competitive way, and it adds a most wholesome incentive for improvement and gives an objective and goal to the physical education program. From the intramural side much more interest is taken and many more men compete when they have been taught the fundamental skills of a sport in the physical education classes and have developed possibly a moderate degree of proficiency. The instructors in physical education find that this *incentive* strengthens their teaching approach with the student. The physical education instructor in some colleges is being closely linked up with the intramural division in this way. The wrestling instructor in physical education, for example, acts as the general advisor and director of the wrestling program in intramurals; the fencing instructor as the director of the fencing, not of course taking on the responsibilities of the organization, but only the type of supervision and instruction to be given. In this way the two are closely knit together and sup-



plement and strengthen each other. The value of this sort of a working relationship between the two divisions is of incalculable benefit to both, and it is my firm belief and prediction that we will see great progress made in the development of a closer coordination between these two divisions in the next few years.

Of necessity in this sort of a set-up, it is absolutely essential that the intramural program be simply *one division* of the broad physical education department, and *not* a separate department carrying on its activities with little regard or concern as to what is being done in the other divisions. In other words, intramural activities are one phase or division of the physical education department, and not simply an over-grown step-child of intercollegiate athletics. Dr. J. F. Williams states in his recent book, with reference to the control of intramural athletics, "Intramural sports should not repeat the history of varsity sports. That record has too many mistakes, failures and pitfalls. The organization, direction and control should reside in the physical education department hands, because all sports should be educational. Physical education departments must recognize this *opportunity* for leadership and *awake to its possibilities*." The entire staff must realize that it is just as much their responsibility to help develop and promote the *intramural program* as the *physical education work*. Their salary and promotions must depend, in part, on their contribution to this phase of the work, and it must be taken into consideration in determining the teaching load they are to carry in physical education or athletic coaching work. If it is something just tacked on, as one more thing, with *no lightening* of other work and no recognition of work well done, it will accomplish nothing. The budget for such a division should of course be a part of the physical education budget coming directly from the university or college budget, and not dependent on intercollegiate gate receipts; even though it may remove one of the strongest, if not the strongest argument that intercollegiate athletics has been using to meet the charge of the commercialization of intercollegiate sports and how they have used it. That \$10,000 or \$15,000 spent on intramurals from a budget of \$300,000 or more has paid interest a hundred ways in helping to justify the *status quo* in our present intercollegiate system. So much for the function of the physical education division and its relation to the intramural program.

**N**EXT, as to the function of the intramural division—(bear in mind that I am not discussing the aims and objectives). In the sort of a set-up that I have outlined, the intramural division becomes responsible for the recreational, voluntary activity program. It should offer a broad, diversified sport program with sufficient range of activities in each season to interest practically every physi-



cally sound man in the institution, including the faculty. Faculty interest and participation has increased enormously in institutions where they have been promoted. I believe it should especially offer opportunities for voluntary unorganized activities when students may play or compete without belonging to any definite group or organization. Some have limited intramurals to the organized competitive activities. This I believe is a mistake. These opportunities should be available at certain definite hours, such as 4:00 to 5:30 P. M. daily, so that they know that others will be there and that facilities and equipment will be available for informal game activities. The intramural division should do everything in its power to establish the tradition that the time from 4:00 to 5:30 P. M. be given over to active recreational interests with everyone taking part, and that no classes, laboratories, seminars or special lectures can encroach on this time. This tradition, once established in our institutions, would do more to make sports for all a reality than anything else that could be done. At Oberlin we have been working along this line for the past three years, emphasizing with the President, faculty and others, at every opportunity, the importance of setting aside this much of the student's time for recreational activities. Each year has seen a marked increase in the number of men participating in the informal game activities carried on out-of-doors in the fall and spring and in the gymnasium in the winter months. Such a program does require a rather extensive development of both the outdoor and indoor facilities, but is perfectly possible even in a large university. Intramural athletics must always adjust itself in the broad program of physical education and not attempt, as it has in the past, to be an entirely separate and distinct entity.

**F**INALLY what is the function of the intercollegiate division in this type of a set-up and what should be the relationship of the intramural division to the intercollegiate division? Intercollegiate athletics offer the opportunity for men of outstanding athletic ability to compete in extramural competition with the possibly somewhat keener joy and zest to be derived from matching skill with another institution. There are unlimited numbers of other functions that have been ascribed to intercollegiate athletics, but in the final analysis intercollegiate athletics are supposed to be conducted for the education and welfare of the students taking part.

The relationships in a broadly conceived department have sometimes been expressed as follows: Physical education is the broad foundation for developing skills and interests; intramurals offer to all the chance to use these skills in competitive activities; and intercollegiates are the peak of this athletic pyramid, giving the superior few the opportunity for the keenest type of competition. Intercol-

legiate athletics thus become the natural outgrowth of a broad physical education program. This sounds logical and fine. However, it is the method of selecting and sifting men for this intercollegiate competition that has raised some question recently.

Some have been so bold as to suggest that the next forward step in our physical education and athletic programs, and a step which has already been taken by a few schools in certain of the less highly organized sports such as soccer, fencing, etc., is the selection of the extramural teams from the intramural teams, so as to really make intercollegiate sports the outgrowth of intramural sports instead of selecting and grooming varsity athletes as soon as they enter school and sometimes even before. These extramural teams are to be selected after they have played through the intramural schedule, and to play two or three games the latter part of the season. The intercollegiate teams then are the outgrowth of the intramural teams and represent the best in that sport. This seems to be a sound and logical development of a broadly conceived physical education program.

However, there will be few athletic departments giving such a proposal even the slightest consideration. They see in this an encroachment on their athletic preserves and an attempt to change the present intercollegiate program. Any of you who have attempted to promote extramural competition for intramural champions have not found the idea received with great enthusiasm by the intercollegiate division. We have, however, been able to try it out for the past four years at Oberlin in soccer, basketball and handball, and it has proved a most successful experiment. I believe that Yale, Harvard, Princeton and possibly other eastern institutions have carried this plan out in football with the class and dormitory teams, and the Western Conference schools are hoping to secure the necessary approval to try it in handball.

A DEPARTMENT of physical education organized along these lines would make possible the integration of each phase of the department's program. Each phase would be the foundation for and would naturally lead to the next. Mr. C. W. Savage, writing in the *North American Review* for December, 1929, raises the question as to whether it would not be a sounder educational procedure to make intercollegiate competition the natural culmination of an apprenticeship of two, or even three years, in the ranks of a finely administered intramural program, instead of having the extramural athletics the privilege and opportunity of the comparatively few who are selected and groomed for it as soon as they enter college and even before. Or perhaps successful units in the intramural competition might in turn, or several at a time, compete against similar

units from rival institutions. I realize that this is being carried out at several institutions to the extent that any men who are dropped from the varsity revert to class or dormitory teams and have an opportunity to compete with these teams and to return to the varsity squad if they begin to show class. The champion athlete would then not assume the tremendous importance he does today, and most of the rules of eligibility, transfer, residence and gentleman's agreements would become unnecessary.

Such supposedly radical ideas are, of course, not new. Many of you believe in the soundness of them, but because of your present situation, are not in a position to espouse them too openly. Others of you feel your utter dependency on intercollegiate athletic gate receipts or the bread winning end of the department (as the boys say), and feel that the present intercollegiate football system justifies itself by supporting the intramural program and many of the major and minor sports. Others believe that the best plan is to limit intercollegiate competition to two years, giving more men a chance to compete. There is also a belief held by many that the present system is sound and that all we need to do is to increase the number of varsity teams, and in this way the number who will compete in varsity athletics. With the evolution and development of intramural athletics changes are bound to come and are already on the horizon at some places.

# Round Table Discussion on the Administration of Intercollegiate Athletics

PROF. W. L. HUGHES, *Chairman*  
*Columbia University*

PROF. LUTHER GROSSMAN, *Summarizer*  
*Susquehanna University*

## Topics for Discussion.

### *Relationships:*

What should be the relationships of the Department of Intercollegiate Athletics to the Health, Required, and Intramural Programs?

In opening the round-table Mr. Curry Hicks of Massachusetts State College was requested to present the plan of organization recently introduced at Massachusetts State College. The providing of more adequate facilities at Massachusetts State made possible an enlarged program of Physical Education, thereby making it not only desirable but necessary to effect a reorganization. The department being headed by Mr. Hicks and the program includes:

1. Required recreational activities
2. Intramural sports
3. Intercollegiate athletics

Provision is also made whereby students desiring to do so, can qualify to teach Physical Education in the Public Schools. Students pursuing these courses are used as assistants in the conduct of the required recreational program.

The coaches of the intercollegiate sports are all on full time, employed by the college. In addition to their specific coaching duties they assist in the conduct of the various phases of the Physical Education program.

Student health is under the direction of a physician. This same individual is in charge of the Infirmary, conducts all medical examinations, issues excuses from all classes due to illness and teaches First Aid and School Hygiene.

The consensus of opinion seemed to favor a very close tie-up between all the above phases of the program.

### *Athletic Committee:*

Should the athletic committee, or council, or both, be a committee with power or merely advisory, or should there be an incorporated board?

The function of Boards of Control, Athletic Committees, and similar bodies whose membership included faculty, undergraduate and alumni representatives apparently is more and more of an advisory nature. The consensus of opinion was that in such a capacity these bodies have and will continue to constitute an important and valuable part in the organization of a department of Physical Education.

In no other way can adequate and satisfactory contacts be made with these groups. No better medium has been found for the bringing about of better understandings relative to the nature, scope, and purpose of intercollegiate athletics in the educational program of an institution. Matters of determining policies, etc., are more and more being placed in the hands of duly appointed members of the faculty, specially trained in the administration of activities in the department of Physical Education.

*Student Control:*

Should students have a part in the administration of intercollegiate athletics? If so, how much and in what way?

The answer of the group seemed to be that students should assist but should not be given full control of the administration of intercollegiate athletics.

*Athletic Association:*

Is there need to have a student athletic association? If so, what are its functions?

A vote of the group showed that most student athletic associations of institutions represented at the meeting are non-functioning and exist in name only.

*Student Managers:*

How are student managers selected, trained, supervised, promoted, and rewarded?

Director Clevenger discussed Indiana's student manager system. A majority of the group were in favor of a student managers' plan and believed it had many educational possibilities.

*Training of Coaches:*

What should be the relationship of the coach to the entire physical education program? How can coaches be interested in a broad program of physical education? Should coaches be expected to teach required classes or assist in physical education major classes?

*Finance:*

What should be the financial policies regarding the control of funds, budgets, buying, bookkeeping, auditing, and so forth?

In some institutions both state and denominational, the institution assumes entire responsibility by budgeting the department. Gate receipts are included in the budget.

In practically all institutions represented in the discussion separate fees for the specific purpose of supporting a program of intercollegiate sports formed a nucleus for the general departmental budget. In a number of cases this fund was retained either in fact or through bookkeeping as a separate division of the entire budget. There seemed to be a growing tendency on the part of institutions to reorganize and assume the responsibility of adequately financing the work in the department, including intercollegiate sports.

*Ticket Sales:*

What routine should be followed in the management of ticket sales?

*Care of Equipment:*

How should athletic equipment be purchased, marked, issued, stored, etc.?

*Facilities:*

How can a director distribute the use of facilities so that neither intercollegiate, intramural nor required activities will be too greatly handicapped?

*Program:*

Should intercollegiate sports be classified as major or minor? If so on what basis: tradition, public interest, gate receipts, student need, or educational value? What should be the policy of the department regarding intercollegiate competition?

*Health of Athletes:*

What policy should guide in the care of athletic injuries and in safe-guarding the health of athletes?

*Management of Contest:*

What are the routine duties to be considered in the management of intercollegiate contests?

*Objectives:*

What should be the objectives in the department of intercollegiate athletics?

Two and one-half hours did not prove sufficient time to discuss all the topics listed above. Just before the meeting adjourned there was a spirited discussion going on over the payment of small fees to college athletes for officiating in intramural or other contests. Several institutions represented permitted this practice without affecting the amateur status of the athlete. The point was brought out in the discussion that the A. A. U. would consider these college athletes as professionals and would bar them from A. A. U. competition.

Unusual interest was manifested in the paper presented by Ray Oosting, Director of Physical Education, Trinity College, entitled "A Study of Graduate Opinion on Physical Education and Athletics for Men in a Selected Group of Small Colleges."



# Control of Ringworm Infection of the Feet

With Recommendations for Personal Hygiene

By W. R. REDDEN, M.D.

*Director of First Aid, American Red Cross*

**R**INGWORM of the glabrous or smooth parts of the body is of particular and practical interest to the Directors of Physical Education in Colleges, and in fact to all who have charge of student groups.

In 1930 it seemed to us that this infection held sufficient significance to warrant a careful investigation into its extent, severity, and particularly into hygiene and sanitation which might prove effective in the control of disease.

In order to make the investigation as practical as possible we discussed the problem with Dr. Edwin O. Jordan, of the University of Chicago, Dr. F. D. Weidman, University of Pennsylvania, Dr. W. G. Smillie, Harvard School of Public Health, Dr. John Farrell of the Rockefeller Foundation, Dr. Hopkins of the College of Physicians and Surgeons of Columbia, and others.

At the same time it seemed advisable to attempt to find out what colleges and medical schools were doing or planned to do to add to our knowledge of the disease. We therefore sent questionnaires to 658 universities and colleges and 74 medical schools. 126 or 19.1 percent of the former, and 19 or 25.5 percent of the latter replied. 67.5 percent of the replies from universities and colleges indicated no investigation. 42 percent of the replies from medical schools were negative.

This investigation showed that although many colleges, universities, and medical schools were cognizant of the condition, only 19.8 percent were conducting any type of special investigation.

This report is based on the above work and on a careful survey of material published in this country.

The dermatologists of this country became aware of the importance of this infection only when Ormsby and Mitchell presented their paper in 1916. They clearly indicated that every skin disease involving non-hairy parts of the body and other smooth skin surfaces, especially those parts whose surfaces press against each other, should be considered ringworm until proved otherwise.

Since then skin specialists have unearthed thousands of cases, and physicians in colleges, schools and private practice have found

that many cases which they had treated as "Eczema," "Anal Itch," "Jock Strap Itch," and "chafing" were really fungus infections due to ringworm. For at least four years the United States Public Health Service has been broadcasting the statement that probably fifty per cent of the population in the United States each year is infected with ringworm. Part of this statement is based on a questionnaire survey made during recent years among the dermatologists of this country.

If you, for example, have soft corns, cracked toes, thickened or thinned-out toe nails, more or less wrinkled, discolored or deformed, you probably have active ringworm.

If you have itchy, chafed areas of skin on the inner parts of the thighs, in the groin or anywhere on the skin surface, or if you have scaling of skin about the fingers, palms, toes or soles, or callous formation on the soles, you probably have active ringworm.

Probably the best name for this particular type of fungus infection is Epidermophytosis or plant disease of the epidermis, for the disease is limited chiefly to this outer skin layer. But it is obvious that "Athlete's Foot," "Dhobie Itch," "Red Flap" and similar popular names will remain in common use.

### Why It Spread

"But why," you ask, "did this infection suddenly become so widespread?" There are four reasons.

First: It was probably widespread before the war, but because the actual disease did not resemble the usual ringworm, it was not even suspected, except in rare cases.

Second: With the mobilization of millions of men and women for duty, congested quarters, feet encased in heavy socks and boots, feet soaked with water and perspiration for hours and days, the infection rapidly increased in intensity and spread.

Third: The ever increasing use of swimming pools with their adjacent shower and locker-room equipment in preparatory schools, colleges, universities, country or town clubs, constantly increased the chance for infected persons to spread the fungus to every surface and to everything they touched with infected parts of their bodies.

Fourth: Once the fungus became widely distributed, it spread rapidly to hotels and homes.

The fungus thrives best under conditions of warmth and moisture, hence is found most generally in the South, and in the North more frequently in summer than in winter, with a maximum rise in September and with May a close second. It is more liable to occur on persons who are highstrung and who perspire readily.

Using the same index of warmth and moisture, it attacks the

skin folds most frequently, particularly between the toes, and especially between the fourth and fifth toes where skin surfaces are pressed together almost constantly when shoes are worn.

The presence of ringworm fungus on the body does not necessarily mean an active infection of the skin, for the plant is so widespread it is almost impossible to be free from it. Curiously enough, no break in the skin is necessary for an active infection to take place. Weidman placed cultures of the fungus between two toes which he then bound together for about two days. Infection took place slowly but definitely.

### Watch the Toes

There are at least two important RESERVOIRS on the body in which large numbers of the ringworm spores may remain for months and even years—the spaces between the toes, especially between the fourth and fifth, and the toe nails. With this in mind, it is easy to understand how readily one becomes re-infected and with what ease other parts of the body are attacked. In fact, whenever ringworm of other parts of the body appears, these reservoirs should be checked up.

Dr. Arnold<sup>1\*</sup> suggests that the spaces between the toes are dry in children until shoes are worn, but that when feet are encased, these spaces are constantly moist, and the corneal layers of skin which are being constantly shed in the presence of bacteria result in a cheese-making laboratory—the skin scales taking the place of casein. The odor will vary with the types of bacteria thriving on this alkaline moistened skin surface.

This is the soil upon which fungi can grow if seeded in sufficient quantities. It requires careful personal hygienic measures to remove these bacterial cultures and other material from between the toes.

White's<sup>2</sup> report of 192 cases in 1919 gives some indication of the frequency of infection on various parts of the body.

Thighs and adjacent parts .....	63
Feet alone .....	33
Hands and feet .....	22
Hands alone .....	21
Axillas alone .....	11
Thighs and axillas .....	17
Scattered distribution (which includes bends of elbows and knees, flat surfaces of trunk and extremities) ..	26

No better evidence of the spread of the fungus to body parts other than toes is given than in the report of Dr. White.

Fortunately, at least 50 per cent of the people infected pay no attention to the condition, and it clears up without special care.

\*Numbers refer to references at end of article.

Moreover, during the colder months it subsides unless people are constantly having sweaty feet exposed to infected floors or clothing.

### Only Ten Per Cent of Cases Are Real Problems

Another 40 per cent of the cases are curable in the hands of the ordinary physician or the dermatologist. This leaves only about 10 per cent of the cases in a group which present a real problem for treatment: most of these have ringworm of the toes which requires the services of the specialist, and even he will refrain from giving a favorable prognosis. Thus, save for a small percentage of the cases of this form of ringworm, there is nothing to get excited about.

The problem does not constitute a public health menace, but rather a personal and public nuisance.

This is felt particularly by departments of Student Health and Physical Education, for frequently the infection seriously handicaps those who are participating in athletic work.

### A Study of Freshmen at University of California

The report of Legge *et al.* at the University of California throws valuable light on the problem among university students.

Legge<sup>3</sup> examined 3,100 freshmen for this condition in the fall of 1928. Of this number 53.3 per cent of the men and 15.3 per cent of the women showed clinical signs of the infection, which indicates that the disease is already common among high schools and preparatory schools.

At the end of the spring semester, he re-examined 1,000 men and 997 women who had been engaged for two semesters in physical education, and who used the shower, swimming pools, and gymnasium apparatus. Of these, 78.5 per cent of the men and 17.3 per cent of the women had clinical signs of ringworm. That is, there had been a 25.3 per cent increase of the disease among the men, and a 2 per cent increase among the women. Many observers have indicated that men and boys are far more frequently infected than women and girls.

### Why Women Have Ringworm Less Than Men

What were the factors at the University of California which contributed to the difference in the increase of the disease spread among the two groups?

Legge says, "The women students use the new Hearst Gymnasium equipped with every known sanitary device.

"Women students and attendants are obliged to provide and wear rubber bathing shoes, and under no circumstances are they

permitted to walk with bare feet on the floors of showers or runways leading to swimming pools or gymnasiums." He adds:

"Another reason women students have less ringworm of the feet is that their habits are cleaner and they observe a much higher type of personal hygiene. They perspire less. They wear lighter, low shoes which are better ventilated, and change these oftener.

"The men on the other hand use an antiquated gymnasium where, on account of lack or non-use of bathing shoes, and inferior sanitary facilities, the students constantly walk in their bare feet and become infected."

Probably if we all wore thin stockings and sandals the problem would be solved.

### What We Know About the Fungus

What can be done to help in the prevention and control of this skin infection? It is obvious that it is impossible to keep man's environment free from this fungus. But there are measures that will help to reduce the volume of the infecting agent.

At first thought the control of this infection seems hopeless, for no matter how thoroughly you may rid clothing and surfaces of the fungus, just one infected barefooted person in the shower or locker rooms or about the swimming pool may be enough to re-infect surfaces, bodies, and clothing.

However, if a few more investigators like Legge will present us with accurate data on the relationship between careful personal and environmental hygiene and the control of ringworm, I feel sure we shall be able to solve the control problem.

Certain it is that it takes the fungus a number of days to grow on the most favorable laboratory culture media. It is just as certain that it takes days to grow in such a favorable human garden plot as that usually found between the fourth and fifth toes.

Therefore, since the fungus is readily killed by a temperature of 49 to 51 degrees Centigrade when it is in the open, since it can be removed by careful washing and drying as long as no actual invasion of the skin has occurred, and since conditions favorable to its growth, such as moisture and warmth, can be controlled at least to some degree by careful personal hygiene and the use of light, clean stockings and well ventilated footwear, the control seems far from impossible.

### To Prevent and Control the Infection

At present, what helps in the prevention and control of this infection?

1. Never go barefooted except to bed, and when actually in the bath.

2. Make your rub-down a rub-DOWN; that is, dry the body from head to foot and never reverse the process. Most persons start out in the right direction, but after they have dried the feet, they discover a wet or damp spot in the groin, on the inner surfaces of the thighs, on the back, etc., and immediately use the towel on these places even though the towel may have swished over the floor as the feet were dried.

3. Use a bath towel only once unless you use a separate towel for the face and feet each time. Otherwise, there is every chance that the ringworm fungus lodged on your towel from the morning or the day before may be transferred to other parts of the body. Besides, why should you want to dry your face and head with a towel that has been used on the more soiled parts of the body?

#### *If You Are Infected*

4. Dry off in the tub after a bath if you have a definite skin infection on the feet, instead of stepping onto a bath mat first. Then scald out the tub carefully.

5. Wear stockings or socks of light weight which can be washed daily and allowed to remain in hot water for about fifteen minutes.

6. Sleep alone when the infection is marked and make sure the bed linen is carefully laundered.

7. Wash the feet carefully at least once a day, especially between the toes. Apply rubbing alcohol, which is 70 per cent, freely to feet and toes. Dry thoroughly with a separate paper or cloth towel—one use only. Then dust the feet and toes with ordinary talcum powder.

#### *In Public Bathing Places*

8. Use single service paper sandals for slippers, or slippers or sandals that can be boiled or otherwise sterilized after each use. The same rule holds for the uninfected.

Note: The fungus has been cultured from ordinary leather slippers months after use.

9. Change daily into clean underclothing and put on only fresh gym togs worn next to the skin.

#### **Supervision of Pools, Showers and Locker Rooms**

All those responsible for groups using gymnasiums, showers, locker rooms, and swimming pools should:

1. Institute a skin inspection system to include not only the feet but also the whole skin surface. Every newcomer should be examined by a physician who should have the assistance of a der-



matologist until he becomes familiar with the clinical manifestations of the infection.

2. Set up a general plan for exclusion on the advice of the dermatologist.

3. In general, exclude all severe cases as much for their own sake as for the protection of others. Return should be via the physician.

4. Check up all cases by the microscopic examination of material properly taken. As Weidman says, you must scrape, scrape, scrape, to make sure you have diagnostic material.

Note: The method is easily learned by one who has had moderately good training in laboratory and microscopic technic. But it takes at least a week in a dermatological laboratory for one to become efficient.

5. Handle the moderately severe cases to suit local conditions. It is impossible to set up a universal standard. However, they should be under medical care and control and should be given careful instruction in matters of personal and environmental hygiene, in order to prevent as far as possible spread of the infection to other parts of their own body and spread of the fungus to others.

6. Allow mild cases to continue with their work, for it is obvious that exclusion from the gymnasium, pool, etc., is impracticable. But the same type of inspection and re-inspection and education as is used in the severe cases should be followed.

7. Have a laundering system that insures an adequate daily towel supply and the proper sterilization of bathing suits. This is essential.

8. See to it that floor surfaces and coverings, drain racks, rubber mats, etc., are thoroughly scrubbed daily and scalded if possible and that all these are dried as thoroughly and rapidly as possible.

9. Use a rubber foot bath or some similar container with a 1 per cent hypochlorite solution, and compel all students to pass to the showers through one of these. Repeat this process as they go to the locker rooms.

The work with sodium hypochlorite solution was developed by Osborne and Hitchcock in the high schools of Buffalo, during the year ending May, 1931.

As a result of this work no new cases of foot ringworm have been reported during the time to the Department of Physical Education.

Moreover Dr. Osborne has seen no new cases in private practice among Buffalo High School students, whereas he has seen many from nearby places. A more recent re-check of the skin of all high school students of Buffalo showed no new cases.

The use of sodium hypochlorite in foot pools gives users a chance to have the fungicide in contact with the feet for at least 15 seconds, which gives ample time to kill surface fungi.

This method also keeps the floor surfaces covered with a moderate concentration of the same material and thus helps to reduce the fungi. In addition the amount of hypochlorite carried into the pool increases the germicidal properties of the pool waters. Sodium theosulphite on the other hand forms sodium chloride with the sodium hypochlorite in pool water and thus dangerously decreases the germicidal power of the pool water.

There is no doubt about the value of using sodium hypochlorite in 2 per cent solution to spray around runways, showers and locker room floors—some make 4 per cent solution of wash water used on floors. The application to floors is made after the clean-up and the material is left on over night.

The solutions in the rubber baths or other containers are changed each morning. No renewal is needed during the day for a load of about 500. Experience will guide you best for heavier loads.

If every member of this group concerned with this problem will set into immediate operation the suggestions made above, will bring all active cases under proper medical care, will give these facts to students and urge the reporting of fresh cases, and then will report results a year from now, I am sure we will have some valuable information to contribute to the subject of the prevention of ring-worm of the feet.

#### REFERENCES

1. Dr. Lloyd Arnold, Research Laboratory, University of Illinois, College of Medicine and Department of Public Health, State of Illinois.
2. Dr. Charles J. White, Professor of Dermatology, Harvard Medical School.
3. Dr. Robert T. Legge, University of California.

# Guiding Principles in Teacher Training from a Public School Point of View

\* By V. S. BLANCHARD

*Director of Health Education, Detroit Public Schools  
Detroit, Michigan*

CONCEPTS of education have undergone radical changes in the past few years. Physical education has been faced with the problem of how to adapt itself to these changes, many of which have come from without, for we must admit that they began at least when we as an educational factor in the public schools were tolerated but not generally accepted. Aside from this the profession has also been busy cleaning its own house from within. Educational philosophy is still changing and will continue to change. Physical education must meet these changing situations, integrate itself more closely with the entire school curriculum, and continue its house cleaning.

The public school needs physical education teachers who are open minded and receptive to new ideas. The curriculum content and subject matter are of secondary importance if our teacher-training institutions have inculcated a spirit in their prospective teachers which seeks new and better ways of meeting ever recurrent problems. There is no place for the teacher with nothing but a notebook filled with factual knowledge gleaned from his alma mater. There is a place for the teacher who has learned to think, to doubt, to question, to study, and to recognize that education is a continuous process from the cradle to the grave; that, though the training may be adequate for today, it will probably be sadly inadequate ten or fifteen years from today. The teacher-training institution which fails to take cognizance of this also fails to recognize the ultimate consumer as the criterion upon which the teacher should be prepared. There is a practical ever changing situation in the field to be met. Theoretical philosophizing will not meet it. Neither will the training of a decade ago when public schools were primarily desirous of obtaining the services of a high powered coach to teach physical education.

The public school needs fewer coaches and more teachers of physical education. Teacher-training institutions that have developed out of coaching schools are apt to produce these high powered coaches but indifferent physical education teachers. An intelligent teacher well grounded in the basic principles underlying health and

physical education can, in a short time, adapt himself to almost any coaching situation in the public school, whereas the man who is basically trained in the technique of coaching only has a difficult time in assimilating the broad concepts of physical education.

The physical educator, whether rightly or wrongly, is being looked upon increasingly as the person to instruct in health. Very little is being evidenced that teacher-training institutions are meeting this situation. The average physical educator is motor-minded. He has a great deal of difficulty in adapting himself to the technique of class room instruction. His training has been concentrated in the gymnasium, on the playfield, and in the swimming pool. We need teachers who are thoroughly grounded in present day health practices and with ability to apply modern methods of teaching under classroom situations. Pre-medic courses in anatomy and physiology will not suffice. The prospective teacher should be given a wealth of material in activities and problems related to the field of healthful living which he can draw upon in vitalizing health instruction for children.

The teaching of the physical activity program has become a socialized and naturalized procedure. This necessitates an organization and a technique in no way comparable to former methods employed in gymnasium and playground instruction. The teacher is in the background, no longer dominating the situation but guiding it. Has the training of teachers kept pace with these changing concepts in the activity program? In some cases it has, but teachers are still coming to the public schools trained basically in calisthenics and in apparatus technique. They are either unfamiliar with methods by which children may be stimulated to self-direction, self-control, self-appraisal, and cooperation in play, or loath to venture into this more difficult teaching technique, content merely to dominate and control. The teacher of a naturalized program of physical education must place a great deal of emphasis on activity, recognizing that physical education is the contribution made to the complete education of the child through big muscle movement. He must recognize also that this becomes problem solving and that there must be discussion, with pupils presenting difficulties, offering suggestions for remedying them, weighing these and offering suggestions for their solution.

There are, also, too many teachers in search of degrees and too few in search of an education. This probably applies to graduate students more than to undergraduate students. Our public schools themselves are largely to blame for this situation since degrees for graduate work have become increasingly important criteria upon which to base promotion. Unfortunately such degrees are at present a measuring stick to denote that a certain amount of subject matter

has been prescribed and taken. Whether or not the matter consumed has any particular bearing on the teaching situation is often of minor importance if the individual has attained the degree for which he has been striving. Very few teachers in the field have the temerity to suggest to a teacher-training institution that they have a felt need which they wish fulfilled, but instead take the medicine as prescribed. How pleasant and profitable it might be for some of them to browse around in a graduate school until they became satiated with that which to them was worthwhile.

I would like to suggest further that the prospective teacher work more hours in his laboratory and that the laboratory more nearly approach the actual teaching situation. A teacher, who for four years has attained a maximum of theoretical knowledge with a minimum of the practical, pitch-forked into a teaching situation where he is met with the immediate necessity of dealing with a large group of adolescent boys or girls, is often discouraged from the outset and has to readjust a great many of his preconceived ideals. He learns many things from bitter experience which might have been gleaned through more "learning by doing." He is too often a liability rather than an asset to the public school system.

Teacher-training institutions might well impress upon a student in his undergraduate days that the profession of physical education is young compared with many other subjects in the curriculum, that it is still thought of a "special" subject in many places, and that it is only through presenting a unified, coordinated front that the profession can forge ahead to general acceptance as a basic subject in the curriculum. All teachers should have a keen understanding of this situation and learn professional mindedness in their undergraduate days, prepared as they go out into the field to ally themselves with professional groups, organized to further their own cause. This is an acute and difficult problem for those of us faced with encouraging and directing professional pride among physical education teachers who come to us satisfied that now with their degree they have "arrived."

UP to this point in this paper I have inflicted upon you a personal viewpoint of the teacher-training situation as seen in the public schools with which I am connected. This has been entirely from personal observation with no other criteria at hand. Recognizing the weaknesses in mere personal observations, I have attempted to make this paper a little more scientific by securing the reactions of the teachers of health and physical education in Detroit through the medium of a questionnaire. Forty-seven teacher-training institutions are represented. This questionnaire was returned unsigned, an honest attempt being made to get true, unbiased

statements from our teachers as to the impressions of their training from the strategic position of working in a representative public school system.

The findings from this questionnaire have been analyzed first under three major divisions, elementary school teachers, intermediate or junior high school teachers, and senior high school teachers. These divisions have been further divided into sex and the year of graduation.

We will consider first the problems of the elementary school teachers as presented in their answers. All elementary school teachers in Detroit are women. 257 responded to the questionnaire. Assuming that the response of those graduating longer than ten years ago would not give a true picture of the situation as it exists now, I have considered only those graduating since 1922. 220, or 85%, fall in this latter group and it is upon their replies that the analysis has been made.

*The first question*—Has your training in the following courses been adequate to meet your teaching?—was answered as follows, the negative percentages only being given here:

1. Personal Hygiene .....	Inadequate Training	2%
2. Physiology .....	Inadequate Training	7%
3. Social Sciences .....	Inadequate Training	7%
4. Psychology .....	Inadequate Training	7%
5. Language and Literature .....	Inadequate Training	7%
6. Applied Anatomy .....	Inadequate Training	9%
7. Education .....	Inadequate Training	9%
8. Physical Education Theory .....	Inadequate Training	9%
9. First Aid .....	Inadequate Training	13%
10. School Hygiene .....	Inadequate Training	14%
11. Physical Education Practice .....	Inadequate Training	14%
12. Theory and Practice of Dancing .....	Inadequate Training	15%
13. Biology .....	Inadequate Training	19%
14. Community Hygiene .....	Inadequate Training	20%
15. Administration .....	Inadequate Training	23%
16. Physical Ed. Practice Teaching .....	Inadequate Training	24%
17. Organization .....	Inadequate Training	25%
18. Bacteriology .....	Inadequate Training	29%
19. Mental Hygiene .....	Inadequate Training	30%
20. Methods of Teaching Health .....	Inadequate Training	34%
21. Diagnosis, i. e., Physical Inspection Anthropometry Orthopedics, etc. ....	Inadequate Training	44%

*Question number two*—If you were repeating your teacher training, would you have specialized?

Coaching .....	Yes	9%
Administration and Supervision .....	Yes	9%



Health Instruction .....	Yes 13%
Orthopedics .....	Yes 16%
Physical Education Activity Program .....	Yes 53%

*Question number three*—Has there been a high correlation between the training which you had as an undergraduate and your teaching activities?

	Yes	No
Graduates from 1921-1925 .....	66%	34%
Graduates from 1926-1931 .....	40%	60%

*Question number four*—If you are taking graduate work is it to fill in gaps left in your undergraduate work, or to meet the requirements of a degree, or both?

To fill in gaps .....	14%
To meet the requirements of a degree .....	32%
Both .....	54%

Under suggestions and remarks, 31% expressed a desire for more practice teaching and more practical work in all courses, with an attendant decrease of theory.

7% would make piano playing a compulsory activity.

6% wished for a wider program of state and city organizations, contending that teacher-training institutions are prone to localize their programs too much.

Other remarks varied from a desire for training in art and poster making to complaints on the amount of Danish and Swedish gymnastics taught.

**R**EPLIES were received from *fifty women teaching in junior high schools* who have graduated since 1922. The tabulation of their replies gives the following data. To *Question number one* on the adequacy or inadequacy of their training in the subjects listed:

1. Physiology .....	Inadequate Training	2%
2. Personal hygiene .....	Inadequate Training	4%
3. School hygiene .....	Inadequate Training	5%
4. Applied anatomy .....	Inadequate Training	6%
5. Physical Education Theory .....	Inadequate Training	10%
6. Community Hygiene .....	Inadequate Training	12%
7. Language and Literature .....	Inadequate Training	12%
8. Education .....	Inadequate Training	12%
9. Physical Education Practice .....	Inadequate Training	12%
10. Social Science .....	Inadequate Training	14%
11. Physical Ed. Practice Teaching.....	Inadequate Training	14%
12. Psychology .....	Inadequate Training	17%
13. Administration .....	Inadequate Training	17%
14. Biology .....	Inadequate Training	18%

- |  |                     |     |
|--|---------------------|-----|
| 15. First Aid .....  | Inadequate Training | 18% |
| 16. Diagnosis, i. e.,<br>Physical Inspection<br>Anthropometry<br>Orthopedics ..... | Inadequate Training | 18% |
| 17. Organization .....   | Inadequate Training | 22% |
| 18. Theory and Practice of Dancing .....   | Inadequate Training | 24% |
| 19. Bacteriology .....   | Inadequate Training | 28% |
| 20. Mental Hygiene .....   | Inadequate Training | 42% |
| 21. Methods of Teaching Health .....   | Inadequate Training | 54% |

*Question number two* as to specialization:

- 19% would have specialized in Coaching  
 15% would have specialized in Health Instruction  
 20% would have specialized in Administration and Supervision  
 22% would have specialized in Orthopedics  
 34% would have specialized in Physical Education Activities

*Question number three* relative to a high correlation between training and actual teaching situation shows:

	Yes	No
Graduates from 1921-1925 .....	64%	36%
Graduates from 1926-1931 .....	14%	86%

*Question number four* as to why graduate work is being taken shows that 7% are taking it to fill gaps left in undergraduate work, 76% to fill the requirements of a degree, and 17% for both.

The remarks made by junior high school women are as follows:

36% expressed a desire for more practice teaching and more practical work in all courses with an attendant decrease of theory.

8% wished that college professors would visit the field oftener for first hand information on existing problems.

8% complained of too much adult material in college and not enough for children.

Other remarks included—"more correlation with other departments"—"courses in professional ethics"—"broader understanding of political problems"—etc., etc.

Results of the questionnaire replied to by forty junior high school men graduated since 1922 are as follows:

*Question number one* on the adequacy or inadequacy of training:

- |                                    |                     |     |
|------------------------------------|---------------------|-----|
| 1. Physical Education Theory ..... | Inadequate Training | 1%  |
| 2. First Aid .....                 | Inadequate Training | 2%  |
| 3. Physiology .....                | Inadequate Training | 7%  |
| 4. Social Sciences .....           | Inadequate Training | 7%  |
| 5. Applied Anatomy .....           | Inadequate Training | 10% |
| 6. Community Hygiene .....         | Inadequate Training | 10% |
| 7. Language and Literature .....   | Inadequate Training | 10% |
| 8. Personal Hygiene .....          | Inadequate Training | 12% |
| 9. Psychology .....                | Inadequate Training | 12% |

10. School Hygiene .....	Inadequate	Training 15%
11. Biology .....	Inadequate	Training 17%
12. Education .....	Inadequate	Training 17%
13. Physical Education Practice.....	Inadequate	Training 17%
14. Diagnosis, i. e., Physical Inspection Anthropometry Orthopedics, etc. ....	Inadequate	Training 22%
15. Physical Ed. Practice Teaching.....	Inadequate	Training 25%
16. Bacteriology .....	Inadequate	Training 27%
17. Organization .....	Inadequate	Training 30%
18. Administration .....	Inadequate	Training 39%
19. Mental Hygiene .....	Inadequate	Training 40%
20. Theory and Practice of Dancing.....	Inadequate	Training 40%
21. Methods of Teaching Health .....	Inadequate	Training 40%

*Question number two as to specialization:*

0%	would have specialized in Health Instruction
13%	would have specialized in Coaching
19%	would have specialized in Orthopedics
19%	would have specialized in Physical Education Activities
49%	would have specialized in Administration and Supervision

*Question number three relative to a high correlation between training and the actual teaching situation shows:*

	<i>Yes</i>	<i>No</i>
Graduates from 1921-1925 .....	57%	43%
Graduates from 1926-1931 .....	50%	50%

*Question number four as to why graduate work is being taken shows that 8% are taking it to fill gaps left in undergraduate work, 69% to fill the requirements of a degree, and 23% for both.*

Remarks made by junior high school men show that 36% wish more practical work and practice teaching with less theory.

Other remarks include—"broader training on all grade levels"—"‘gifted students’ are often retained to teach courses in which they have had no practical experience"—"college professors should teach in the field one year out of every three"—"more correlation between different cities and states."

**R**ESULTS of the questionnaire replied to by thirty-five *senior high school women* graduated since 1922 are as follows:

*Question number one on adequacy or inadequacy of training:*

1. Personal Hygiene .....	Inadequate	Training 6%
2. Applied Anatomy .....	Inadequate	Training 10%
3. Education .....	Inadequate	Training 10%
4. Physiology .....	Inadequate	Training 12%
5. School Hygiene .....	Inadequate	Training 12%
6. Physical Education Theory .....	Inadequate	Training 12%
7. First Aid .....	Inadequate	Training 12%

8. Biology .....	Inadequate	Training 13%
9. Language and Literature .....	Inadequate	Training 13%
10. Administration .....	Inadequate	Training 13%
11. Organization .....	Inadequate	Training 13%
12. Community Hygiene .....	Inadequate	Training 16%
13. Bacteriology .....	Inadequate	Training 16%
14. Theory and Practice of Dancing.....	Inadequate	Training 16%
15. Diagnosis, i. e.,		
Physical Inspection		
Anthropometry		
Orthopedics, etc. ....	Inadequate	Training 18%
16. Psychology .....	Inadequate	Training 22%
17. Physical Education Practice .....	Inadequate	Training 22%
18. Physical Ed. Practice Teaching....	Inadequate	Training 22%
19. Social Science .....	Inadequate	Training 28%
20. Mental Hygiene .....	Inadequate	Training 29%
21. Methods of Teaching Health .....	Inadequate	Training 37%

*Question number two* as to specialization:

0% would have specialized in Coaching
14% would have specialized in Orthopedics
23% would have specialized in Health Instruction
24% would have specialized in Administration and Supervision
39% would have specialized in Physical Education Activities

*Question number three* relative to a high correlation between training and actual teaching situations shows:

	Yes	No
Graduates from 1921-1925 .....	100%	0%
Graduates from 1926-1931 .....	75%	25%

*Question number four* as to why graduate work is being taken shows that 30% are taking it to fill gaps left in undergraduate work, 55% to fill the requirements of a degree, and 15% for both.

Remarks made by high school women show that 17% specifically request courses enabling them to instruct more intelligently in health; 9% wished that physical education courses had been more closely related to social problems and to general education; 9% asked for more practice teaching and a closer correlation of various state and school courses.

Results of the questionnaire replied to by forty *high school men* who have graduated since 1922 are as follows:

*Question number one* on the adequacy or inadequacy of training:

1. Physiology .....	Inadequate	Training 5%
2. Personal Hygiene .....	Inadequate	Training 5%
3. School Hygiene .....	Inadequate	Training 5%
4. Biology .....	Inadequate	Training 7%
5. Applied Anatomy .....	Inadequate	Training 10%
6. Physical Education Theory .....	Inadequate	Training 10%
7. Community Hygiene .....	Inadequate	Training 12%

8. Language and Literature .....	Inadequate Training	12%
9. Education .....	Inadequate Training	14%
10. First Aid .....	Inadequate Training	14%
11. Social Science .....	Inadequate Training	15%
12. Psychology .....	Inadequate Training	15%
13. Physical Ed. Practice Teaching.....	Inadequate Training	15%
14. Physical Education Practice .....	Inadequate Training	15%
15. Bacteriology .....	Inadequate Training	18%
16. Organization .....	Inadequate Training	36%
17. Mental Hygiene .....	Inadequate Training	38%
18. Administration .....	Inadequate Training	40%
19. Methods of Teaching Health .....	Inadequate Training	40%
20. Diagnosis, i. e., Physical Inspections Anthropometry Orthopedics, etc. ....	Inadequate Training	42%
21. Theory and Practice of Dancing ....	Inadequate Training	55%

*Question number two* as to specialization:

- 10% would have specialized in Coaching
- 13% would have specialized in Orthopedics
- 18% would have specialized in Health Instruction
- 21% would have specialized in Physical Education Activities
- 38% would have specialized in Administration and Supervision

*Question number three* relative to a high correlation between training and actual teaching situations shows:

	<i>Yes</i>	<i>No</i>
Graduates from 1921-1925 .....	50%	50%
Graduates from 1926-1931 .....	56%	44%

*Question number four* as to why graduate work is being taken shows that 16% are taking it to fill in gaps left in undergraduate work, 62% to fill the requirements of a degree, and 22% for both.

Remarks made by high school men included the following:

20% would have liked more practice teaching and practical application of various courses with less theory. Other remarks were scattering, such as—"a course in public speaking"—"typing and shorthand"—"more training in carry-over sports"—and 7% asked definitely for less expert coaching advice and more training in intramural programs.

THE conclusions that may be drawn from the tabulation of the replies received from elementary teachers are as follows:

1. That from the elementary teacher's point of view further training is needed in mental hygiene, methods of teaching health, and diagnosis since 30%, 34% and 44% respectively feel that their training in these subjects has been inadequate to meet their teaching situation.
2. That the majority of them are primarily interested in the

- activity part of the health and physical education program.
3. That during the past five years there has been less correlation between training and teaching activities since from 1926-1931 60% signified that there was not a high correlation, whereas from 1921-1925 only 34% so signified.
  4. That graduate work is being taken more to meet a degree requirement than to fill in gaps left in undergraduate work, since only 14% said they were taking advanced work for the latter reason.
  5. That from remarks and suggestions offered, it would seem that training for elementary school positions should entail more practical application and less theory, courses in piano playing, and a more complete correlation with various state and city programs.

The conclusions that may be drawn from the junior high school women's replies are:

1. That mental hygiene and methods of teaching health ought to be more fully treated, since 42% and 54% respectively expressed themselves that the present training is inadequate.
2. That, as among the elementary group, the first choice in specialization would have been physical education activities.
3. That, during the past five years there has been less correlation between training and teaching situations, since from 1926-1931 86% signified that there was not a high correlation whereas from 1921-1925 only 36% so signified.
4. That graduate work is being taken more to meet a degree than to fill in gaps left in undergraduate work, since only 7% said that they were taking advanced work for the latter reason.
5. That, from remarks and suggestions offered, it would seem that training for junior high school girls' work should entail more practical application and less theory, a closer understanding by teacher training institutions of problems in the field, and less adult material in college courses with more material suitable for children.

The conclusions that may be drawn from the junior high school men's replies are:

1. That junior high school organization and administration should be stressed, since 40% said that their training was inadequate, and that mental hygiene, theory and practice of dancing, and methods of teaching health be given greater importance, since 40% also expressed a desire for more of this work.



2. That administration and supervision are felt to be very important, since 37% would have specialized whereas only 7% would have specialized in physical education activities.
3. That during the past five years there has been less correlation between training and teaching situations, since from 1926-1931 50% signified that there was not a high correlation whereas from 1921-1925 43% so signified.
4. That graduate work is being taken more to meet a degree requirement than to fill in gaps left in undergraduate work, since only 8% said that they were taking advanced work for the latter reason.
5. That from remarks and suggestions offered, it would seem that training for junior high school men's work should entail more practical application and less theory.

The conclusions that may be drawn from the senior high school women's replies are:

1. That social science, mental hygiene, and methods of teaching health need greater emphasis, since 28%, 29%, and 37% respectively so expressed themselves.
2. That specialization would be on the activity side of the program.
3. That during the last five years there has been less correlation between training and teaching situations, since from 1926-1931 25% signified that there was not a high correlation whereas from 1921-1925 none so signified.
4. That more high school women than junior high school or elementary school teachers are taking graduate work to fill in gaps left in undergraduate work, since 30% are so doing.
5. That high school women teachers feel very keenly the lack of preparation for health teaching, 17% having specifically mentioned this in their remarks.

The conclusions that may be drawn from the senior high school men's replies are:

1. That organization, mental hygiene, administration, methods of teaching health, diagnosis, and theory and practice of dancing need to be stressed, since 36%, 38%, 40%, 40%, 42%, and 55% respectively so stated.
2. That high school men, as intermediate school men, would for the most part specialize in administration and supervision.
3. That during the last five years there has been slightly more correlation between training and teaching situations than a corresponding period prior to this, since from 1926-1931

44% stated there was not a high correlation, whereas from 1921-1925 50% so stated.

4. That graduate work is being taken more to meet a degree requirement than to fill in gaps left in undergraduate work, since only 16% said that they were taking advanced work for the latter reason.
5. That from remarks and suggestions offered it would seem that training for senior high school men's work should entail more practical application and less theory.

TO summarize very briefly from the point of view of the public school physical education teacher in Detroit, it would appear, (1) that the teacher-training institution should provide more practice teaching and practical application of courses with less theory, recognizing that prospective teachers "learn by doing" as well as do children; (2) that since there is a feeling that correlations between the training received and the actual teaching situations are not high, there should be a much closer contact between the college and the public school; (3) that prospective teachers need more training in mental hygiene, methods of teaching health and training in the solving of problems of organization and administration.

# Guiding Principles in Teacher Training from the Viewpoint of a State Director

By A. W. THOMPSON

*State Supervisor of Physical Education, Michigan*

THE subject of guiding principles in the training of teachers of physical education is one of great interest to State Directors of Physical Education who come in contact, not only with the teaching group, but with school superintendents, principals, and school board members who perhaps do not have the same background of belief in the efficacy of the physical education program as do we ourselves. Doctor Brownell presented yesterday for your consideration interesting information as to the variety of standards now prevailing among the teacher-training institutions in the various states. He also pictured the growth of teacher training in the field of physical education and the perplexing problems which face these institutions. To many it seemed that he provided food for thought in his suggestion that there might come in the future a change of emphasis from machinery and operation to the product itself which contacts with the pupil and the general public. He also presented and discussed the problems of: selection of students, teacher-training curricula, qualification of teachers of professional courses, practice teaching, classification of teacher-training institutions, certification of teachers, and the affiliation of physical education with the National Education Association.

Mr. Blanchard of Detroit has this morning presented to you the expression of opinions of teachers in his system as to the value and usefulness of the tools which were furnished them by their respective teacher-training institutions. He has given you a view of the practical relationship of teacher-training subject matter to the actual every day school program. This statement of opinion from the teachers of a large and forward looking city system should give every teacher-training institution ample ground for the consideration of future policies and practices. It might be well to suggest also the advisability of making state-wide such a study as that completed by Mr. Blanchard, and of securing of a wide range of opinions from teachers in the field in many states on this very pertinent subject.

In view of the subjects covered by these two preceding papers, it may be well for this paper to be modified somewhat so as to

present a view of certain general fundamentals, attention to which may result in an improvement of the contribution which physical education teachers are making in the present day school program.

General education at present possesses a viewpoint distinctly broader than was the case a decade or two ago. It concerns itself with the whole child and seeks to bring about a complete, integrated, mental, emotional, physical, and social growth. It has a concept of child growth and development far in advance of the former attention and obedience paid to subject matter alone. It concerns itself with a study of those principles and procedures which will result in social as well as physical growth and in the integration of those activities and experiences which make for wholesome, happy, and fruitful living. As general education has studied its own philosophy and procedures and is constantly changing to meet children's needs and interests, so must physical education and its teacher-training institutions view its own program in the light of these desirable educational objectives and changing needs of growing boys and girls. If this is a true concept of present day education, the problem of teacher training in physical education is to determine how best it may develop knowledge, attitudes, and practices in its graduates that will enable them to best fit into the school system which they join and to make there, through the physical education program, the greatest possible contribution to the physical, mental, social, and emotional growth of its children.

THE following statements are made in the hope that they will be indicative of points of view and skills which need to be possessed by our teaching group if general education is to realize the full value of the physical education program. While they are general in nature, they indicate specific needs if the opinion of superintendents, supervisors, classroom teachers, and school board members may be taken as valid criteria.

The physical education teacher of the present day needs a better understanding of the whole job to which he has dedicated himself. He needs to have a realization of the fact that he is one factor in a unified process and that his complete understanding of that entire process is necessary to its success. He must realize that the present program is no longer one of athletic competition, but that it is based on physical activities graded to the needs and interests of children of both elementary and secondary age. He must see that education includes also the organization and administration of a comprehensive program of health education which seeks to provide experiences in daily living helpful to every youngster. Specifically, it might be suggested that practice teaching should at times provide an opportunity for viewing the entire day's program in the school in which

such work is being done. Too often the prospective teacher has only a brief period of guided teaching and then an early return to the parent institution. As a result he fails to contact with the balance of the day's program and to realize the amount or nature of the machinery necessary to make the school operate smoothly.

Teacher-training institutions should acquaint their physical education teachers with the well known fact that they will seldom find in the schools to which they may be assigned the same high type of equipment (and quantity) available in their teacher-training days. The ability to work and to do good work under trying conditions with minimal facilities is not only a test of the teacher's ability and sincerity but of the depth of the training of the institutions from which he comes.

Physical education teachers need to secure from some source a broad point of view which will spur them on to a greater contribution to the community recreation program. For many years now, general education has stated that worthy use of leisure time was one of the outstanding objectives of secondary education. Certainly in the present situation and in the trends of the times, there is greater evidence than ever of the need in each community for leadership which will extend to the adult public the opportunity of participation in physical activities satisfying and wholesome. The means of rendering such service are already present, to a considerable extent, in the items of knowledge which are part of the training of the physical education teacher. A better realization of his opportunity for service and a knowledge of the techniques necessary for the extension of his program to the post-school group will enlarge materially the influence of physical education in each community. Such service will also furnish those contacts desirable for interpretation and a better understanding on the part of the general public of the objectives and procedures of the school program of physical activity.

The physical education teacher may well be prepared in a minor, preferably in science, to give a broad background of fundamental knowledge and that he may be able to teach a correlated subject where the size of the school system is such as to preclude the possibility of a full time physical education director. This suggestion does not imply that teacher training should scatter its activities in a number of directions to the extent that no one job is done well. Rather is it an expression of belief that if teacher-training institutions give attention to proper guidance in choice of subjects and to a realization of the inability of certain school systems to maintain specializing personnel, the prospective teacher will gain a conception of the philosophy and principles of present day education, a knowledge of fundamentals of physical education activity, a teaching

knowledge of an allied subject, and an impelling curiosity and interest which will urge him into graduate study. Undoubtedly, education should not radically alter its concepts because of the present economic situation, but education will feel the impress of the present situation for some years to come. We should not ignore that situation or fail to take steps which will enable the physical education teacher to make the greatest possible contribution in a variety of circumstances.

The physical education teacher needs a greater appreciation of the viewpoint of the elementary school. There should be developed and encouraged the feeling that opportunity for educational development and personal growth lies in the elementary school field. It may be extremely difficult to induce a desire on the part of ambitious graduates to be located in the elementary rather than the secondary school field, but the basic physiological and mental needs of children indicate that the opportunity for service is even greater there than among the older secondary group. The teacher-training institution must impart to its students a clear and sympathetic understanding of the many problems facing grade school principals and teachers in order that physical education classes may fit smoothly into the elementary school organization and daily program.

Physical education teachers need to feel more keenly that they are members of the general faculty of an institution rather than specializing members. For too long, physical education has allowed itself to be located in the gymnasium or on the playground or athletic field in the minds of other members of the faculty. To some extent this has been brought about by the fact that much of its teaching has been done in out-of-school hours. The resultant feeling, however, that physical education was first of all, *physical*, second *special*, and last of all, *educational*, has given to the profession a tag which is not in keeping with the greatest development of its possible influence. The particular habit of non-attendance of the physical education group at faculty meetings is indicative of the feeling which has been allowed to develop. It would be far better indeed if each graduate understood the wisdom of being so able to arrange his teaching program that his personal attendance at faculty meetings was as regular and consistent as that of other members of the faculty.

Physical education needs to develop greater ability to interpret its objectives, subject matter, and methods to those coming in contact with it. A clear understanding of the place of physical education in each school system and its possible contribution to the general program should be possessed by both school and public. The superintendent and other administrative and supervisory officers, the classroom teacher, the members of the board of education,



the student body, and the general public all have their own particular problems and viewpoints. A sympathetic understanding of these and a consistent, continuous effort to offer information in order that these different groups may understand the purposes and content of physical education will make for improved understanding and a more ready acceptance. Contacting as it does with subject matter which is of inherent interest both to youth and to adults, there are many opportunities for presenting this material in a favorable light so that present equipment, personnel, and time allotment may be maintained and improved. General education has come to see that it is highly desirable that a continuous stream of truthful, factual, and interesting information be presented to the public concerning the general school program. Physical education by its very nature has a fine opportunity in this same direction. The ability to develop such a program in his own respective group should be part of the training and experience of every prospective teacher. This training should include an acquaintance with those agencies in every community which are interested in child development, and a knowledge of how that interest may best be utilized to meet individual needs of pupils.

THERE is considerable evidence of a growing appreciation of the need for professional growth, and such a spirit may well be said to be a desirable outcome of all undergraduate training. Physical education is having loaded upon it duties and objectives far beyond the limited view of those who originally believed it might be carried on in American schools without time allotment, without equipment, and without trained leadership. It has seen come into the picture objectives of social, mental, and emotional training not originally considered as being within its primary objectives. It has seen a growing trend toward health education programs which seek a scientific knowledge of the actual physical and mental condition of children, the correction of defects, and the promotion of instruction through daily experiences leading to joyful, healthful living. Community recreation programs and safety education are knocking at its doors for inclusion in its already voluminous content.

An understanding of the broadening and the growth of physical education indicates in no uncertain terms the necessity for adequate preparation of the highest type. Grounding in the fundamental sciences, in the knowledge of child nature and growth, in educational objectives and procedures, in the specific contents and objectives of physical education, are all necessities if, as individuals, we are to keep up with the pace which we are setting or which is being set for us. To expect ample training in all these directions

in undergraduate years is to expect too much. Perhaps the trend is well indicated by recent steps taken in California and Pennsylvania to require a Bachelor of Arts or Science degree and a year of additional training in education from all prospective teachers of physical education. Certainly each member of the profession today must understand the necessity of a continuous, personal program of training while in service if he is to enlarge his undergraduate education so as to best meet the growing scope and responsibilities of the present program. A study of the attendance at our graduate schools indicates that such a realization is in the minds of many of our people. Certainly such a line of thought should be implanted there at an early date in order that such additional training may be sought for its value and opportunity for educational contribution rather than the more negative reason of merely meeting the requirements of higher legal standards. The discussion of yesterday relative to the affiliation of the American Physical Education Association with the National Education Association is indicative of this growing realization that our emphasis should be on education, and that physical education is taking every possible step to enlarge its professional contribution.

Our teacher-training institutions have experienced a phenomenal growth in point of numbers, in presentation of subject matter to their students, and in forward looking professional viewpoints. Our ever-changing society and the dynamic philosophy of present day education place upon these institutions an increasing responsibility and opportunity which past experience indicates will be met in a wholehearted and intelligent manner. The general viewpoints advanced here as being desirable, if physical education is to fit in with present day educational philosophy and needs, are offered for the consideration of a professional group which has grown with the general field and which, we are certain, will so guide its present and future students that physical education will continue to deserve an increasingly important place in the field of education.

# The Training of Teachers from the Viewpoint of a School Administrator

By WILLIAM H. BRISTOW

*Deputy Superintendent, Department of Public Instruction,  
Pennsylvania*

NO problem should give the administrator more concern than the type of individual who is made responsible for the direction and organization of activities comprising the health and physical education program of the schools. Health and physical education have been accepted reluctantly by many communities, and for this reason it is particularly important that the work be carried out in a very successful manner. Furthermore, while an error made in teaching the academic or vocational subjects may not be apparent, and might easily be overlooked by the community, any difficulty which arises in the administration of the health and physical education program is quickly sensed due to the personal nature of the service. We are all intensely interested in the physical well being of our children.

The conception of what should constitute the work in health and physical education has changed materially during the past few years. From a program centering around a few formal activities it has come to involve a large section of the school program. Any conception of the health and physical education program which is limited to athletics, or even to a formal program of physical education is not acceptable to a modern school man. The health and physical education program touches, in one way or another, practically every phase of school work. It is particularly concerned with the following:

1. *Health Examination.*—Those who are responsible for the program of health and physical education must more and more depend upon the results of the health examination. In the academic field we expect teachers to be familiar with personnel practices and procedures, and to be able to develop and interpret cumulative records which show trends in the growth of the individual. Those in charge of physical education will be required to make use of the records of the physical examinations given by the school physician and to interpret case histories. Attention to individual needs is an empty phase unless accurate, objective and meaningful records are

available to enable those responsible for organizing the program to adapt it to individual requirements.

2. *Health Service*.—Parents are much concerned as to the treatment that is given their children when they are entrusted to the school. We must come to think of health service as including protection of pupils against participation in activities that are harmful, both to them individually and to the group to which they belong. Someone must also be responsible for seeing that the work of the school is not so severe as to sap the physical resources and vitality of the child. In this connection, the supervision of the lunch period is most important. Likewise the school is expected to protect the child from unnecessary danger and exposure, from contagious diseases, and from injuries which might otherwise be avoided.

3. *Health Instruction*.—The health instruction program of the elementary school is progressing satisfactorily. In many quarters, however, it is still characterized by a formal type of instruction, with little relation to the life activities either of boys and girls or of adults. The health instruction program should be continuous, and should touch the pupil throughout his full elementary and secondary school career. As the program develops we shall need to attack many problems which heretofore have not been given adequate consideration. Matters of sex and of personal hygiene need to be approached in such a way that each individual will build up for himself a program that will aid him in organizing his life on an efficient and practical basis. To meet the objective of health instruction for all, we in Pennsylvania are attempting to organize a course of study based primarily on activities, and extending from the kindergarten through the secondary school. As schools are now organized it is necessary to give a time allotment to these courses. In the secondary school we are developing our program so that in the near future each pupil will have at least one period of health instruction each week. In the elementary school our present program calls for from 40 to 60 minutes each week.

4. *Physical Education Activities*.—Physical education activities should, of course, be developed in accordance with the needs of individuals and groups. This means a carefully graded series of activities operated through the elementary and secondary school, with a corrective program for those needing it. In some cases this corrective program will involve exercises, in others compulsory rest periods. Such a program will involve a maximum of pupil participation and a minimum of formal drill. It will give particular attention to activities which carry over into the everyday life of the pupil. It will be concerned with the development of attitudes and skills which will be useful in leisure-time activities. Much more of it will be out-of-doors than is now the case. An athletic program

as we now know it should soon be supplementary to the real physical education program. We shall develop a program whereby the individual competes with himself rather than having the strongest of the school compete with the strongest of other schools. Regular staff members should be responsible for the organization of all intramural and interscholastic activities.

5. *Hygiene of the School Program.*—Those who are to be placed in charge of the physical education program in school will have training so that they may become the advisers and consultants with reference to such problems as the hygiene of the school room, the hygiene of instruction, and mental hygiene. Posture will be something more than a few suggestions given in the gymnasium. Posture exercises will permeate the whole school program. School seating will be adjusted by the responsible authorities, but the director of health and physical education will periodically make a check-up to be sure that proper seating prevails.

Lighting conditions will be adjusted as satisfactorily as possible. School rooms will be decorated to secure hygienic light conditions. Pupils with poor eyesight will be singled out through medical examination and given preferential places in the school room. Children with minor physical defects will be seated as comfortably as possible. Some days ago the press carried an article describing the installation of an electric eye in a classroom so arranged as to switch on the lights at times when they were needed. The results indicate a marked improvement in the work of the pupils.

The development of an instructional program on such a basis as not to place undue strain on the pupils should demand the attention of those in charge of the health and physical education program. Some investigations have indicated that the assignments made by teachers in some schools are such (if completed) as to require the entire time of pupils, eliminating all time for sleep or recreation. This is definitely a health problem, not for direct administration by this division, but certainly for consultative relationships.

The child who is not happy in his work, who is not physically well, who is burdened down by difficulties which he himself cannot understand, is not a fit subject for instruction. Those dealing with health and physical education are in a position to get close to pupils and to help them in solving their life problems. Health and physical education, therefore, have an equity in the guidance programs now being organized in the schools. Here again the relationship will probably be a consultative one. In this respect those in charge of health and physical education become an integral part of the guidance program of the school.

The mere enumeration of some of the major activities relating to health and physical education indicates the extent and importance



of this work to the administrator. It is not expected that any large number of these activities will be carried out under the immediate direction of the division of health and physical education. They are, however, activities in which that department has a definite interest and responsibility. I enumerate them because I think it necessary to define our conception of the health and physical education program before we can discuss the preparation of teachers to effectively administer that program.

Unquestionably any individual who possesses the knowledge and information necessary to coordinate and direct an integrated program of health and physical education must be one with a strong personality and possess the requisite characteristics of a master teacher. Such an individual must have the respect of the staff of the school, both personally and because of his technical knowledge. In the past enough attention has not been given to the problem of selecting individuals for teaching positions. There is an increased emphasis today on such selection. It is conceded that we should not encourage individuals to prepare themselves for occupations and professions for which they are not temperamentally fitted. This does not mean that any of us will say, particularly with the information that we now have at hand, who will and who will not make a successful teacher. There are, however, some requisites that I believe we could all agree upon. It is not my purpose to set up these characteristics, but certainly those directly responsible for training teachers and those responsible for administering state and city programs should agree on the requisites for entrance into the emerging profession of teachers and directors of health and physical education. Because an individual may seem promising as an athlete is not necessarily an indication that he should prepare for the field of health and physical education. Other things being equal, however, such an individual should prove a successful candidate for such a position.

**A**FTER a program of selection has been placed in operation it becomes necessary to establish professional curriculums. May I raise a few questions that I feel an administrator might appropriately ask of one who applies for a position in the field of health and physical education?

1. Is the candidate physically and mentally fit?
2. Does he possess the stability of character and the essential character traits which would entitle him to be placed in charge of adolescent boys and girls, a position which probably offers more opportunities for positive character development than any other position that the school has to offer?
3. Is he possessed of a cultural background which will make



it possible for him to be at home with people who are interested in books, in new social movements, in economics, in political problems, and in the general problems that affect community and social life?

4. Does he have a basic background in the field of science and is he trained in the related fields which are essential for a knowledge and appreciation of the medium with which he works?
5. Is he familiar with the principles of psychology, particularly as they apply to education?
6. Is he familiar with the general aims and principles that have been developed for education?
7. Does he have control of the materials and methods in the field of health and physical education?
8. Has he had supervised practice teaching so that he possesses proof that he is able to conduct a class program of health and physical education on a satisfactory basis? Is he able to apply the ordinary rules of class management as they apply to health and physical education?
9. Is he able to evaluate the results of his work both in the field of health instruction and the field of physical education so as to set up appropriate testing techniques for evaluating the efficiency of the program?

If these are legitimate questions, we are in position to consider a curriculum for the training of health and physical education teachers. This has been done very effectively in a great many instances. It seems to me that we might well divide the program among the following phases:

1. General academic
2. Related courses
3. Professional courses

My first question would, therefore, be answered by devices and procedures for selecting possible candidates for training; my third by the general courses included in such a curriculum; my fourth question by the related courses; and questions five to eight by professional courses.

I do not propose to discuss the problem of curriculum or materials of instruction. That is for someone skilled in the field of health and physical education and also in the field of curriculum construction.

**M**AY I pass briefly to some of the problems that seem to me to be confronting administrators in connection with our health and physical education program?

*First.*—Those who are responsible for health and physical edu-

cation should be "teachers" and in the second place that they should be "teachers of boys and girls." If we accept this, many who have previously held positions in the field of health and physical education would be immediately eliminated, because they would fail to qualify either as a "teacher" or "a teacher of boys and girls." The fine things that are implied in a teacher are too frequently missing in teachers in all fields of work. The individual who has secured his position primarily because of the fact that he has been successful on the basketball or football team, despite the fact that in personal appearance, in language, and in character, he may lack all of those traits and characteristics that you and I wish to be present in those who teach our boys and girls, must soon go out of the picture. It is, therefore, a part of the responsibility of teacher training institutions to develop in their pupils right attitudes toward the teaching profession, and the job of teaching.

*Second.*—The scarcity of teachers with minimum training required for certification in health and physical education, and the low standards previously prevailing has made it possible for many who would otherwise be eliminated, to secure certification. In other words, many school administrators have been forced to accept as teachers of health and physical education, individuals who otherwise would not have been placed on their staff. It is good to know that your organizations are studying this problem.

*Third.*—In the minds of many communities, athletics constitute the major part of the health and physical education program. We cannot expect anything else in view of the emphasis that has been placed upon athletic training. One of our fine physical directors in Pennsylvania was offered a salary increase of four hundred dollars a year to take a position in another school. In consulting the authorities of that school he asked the question "Do I have to win?" The answer was an emphatic "yes." He returned to his old position for, as he said, in that position he had built up among students and patrons the idea that, while it was a fine thing to win, that was not the primary purpose of the athletic program. We depend upon teacher-training institutions to train their students in an all-round program, showing them how such a program can be organized, and made a part of school and community life.

*Fourth.*—Another problem that has come to the forefront is that relating to the small high school. In our training program I feel that very frequently we forget that approximately two-thirds of the high schools of the United States can never have the benefit of teachers of health and physical education if we insist on only those who have trained in that field and in no other field. The problem is a serious one. There are many solutions. In the first place, we can secure larger high school units. That is very desirable

and should be effected as soon as possible. On the other hand, there are many states where for the next fifteen or twenty years we shall continue to have a large number of these small schools. In discussing this problem a recent writer\* says, "The accomplishment of these ends calls for simplicity, unity and continuity in the curricula of small high schools, a restricted, but fundamental academic offering, the probable elimination of Music, Art and Physical Education as formal studies and the avoidance of all special subjects or studies which call only for part-time teachers and that would endanger the instructional organization of the entire school."

The problem is clearly one of training teachers in health and physical education and also in other fields. This general principle has been contrary to the accepted program of many of those who are ardent believers in the specialized curriculum for health and physical education. It is very questionable, however, if the procedure which we have followed in many colleges of training an individual in two or three academic branches and then giving him enough courses in the field of health and physical education to meet minimum certification requirements, will meet our objective in connection with the development of the health and physical education program. The training of such teachers has for the most part consisted primarily in a series of unrelated "coaching" courses dealing for the most part with "athletics." Certainly a teacher with such training is not in a position to carry on as a director of health and physical education activities in a modern school, be it either elementary or secondary. There are sufficient courses related to the field of health and physical education that might be included in the training of a teacher in that field to organize a curriculum whereby the teacher of health and physical education can also be certified in other fields.

AS I sense the feeling of administrators, there is an increased demand for an all-round individual who can coordinate the health activities of the school, who can be responsible for definite instruction in some of these activities, and who can act as a general supervisor with reference to other health problems. If those who carry on the health and physical education program are to be effective, they must possess the personal qualities that will make of them outstanding teachers. They must have the general training that will gain them the respect of the boys and girls and of the community, and they must possess the specialized knowledge essential for the effective administration of their work. As another subject in an already crowded curriculum, health and physical

\*Frank P. Bachman, *Training and Certification of High School Teachers*, Field Studies No. 2, Division of Surveys and Field Service, George Peabody College for Teachers, 1930, page 93.

education may find itself in difficulties. As service to youth—a process, a program—articulated and coordinated, there can be no question of its reception by those responsible for the administration of the schools.

It was in 1916 that the Committee on the Reorganization of Secondary Education wrote "Health" as Cardinal Principle Number One. Since that time much has been done to bring this ideal to successful realization. The administrator, who is increasingly placing emphasis on the development of an enriched curriculum is vitally interested in the program of health and physical education. He will continue to support programs of education outlined by specialists in that field that are possible of realization, and are in line with generally accepted principles of modern education.

# The Present Status of Professional Preparation of Teachers in Physical Education

By C. L. BROWNELL, Ph.D.

*Associate Professor of Physical Education, Teachers College,  
Columbia University*

AS the panoramic camera with its telescopic lens is adjusted to obtain a picture of professional preparation of teachers in physical education, one is filled with conjectures about the result to be obtained. One recalls that there are forty-eight states with as many kinds of educational systems. That within each state the various teacher-training institutions exercise individual initiative to a greater or less degree in the type of preparation given, compatible with their state standards. That there are state, private, and municipal colleges and universities; state, private, and municipal teachers colleges; and numerous kinds of normal schools. That marked changes have characterized teacher preparation everywhere within the past decade.

It is not surprising, therefore, that the picture shows certain definite trends, while at the same time a number of major issues are clouded with uncertainty about procedures to be followed or outcomes to be derived.

Examples of trends are to be found in the number of private normal schools which have affiliated with colleges or universities; lengthening of the training period from two, to three, four, or five years; increase in the number of colleges and universities giving professional courses; increase in the number of institutions giving graduate training; and the tremendous growth in enrollment, both graduate and undergraduate.

Lack of uniformity in procedure or outcomes is illustrated by methods used to select students; number of semester or quarter hours required for the major; type of curricula offered; opportunities for practice teaching; equipment available; training of persons giving the courses; and bases for accrediting departments.

## **Growth of the Teacher-Training Movement.**

To understand the development of teacher preparation in physical education is to recall the history of education in this country and to review the teacher-training movement for academic subjects.

Education during the early days of American society followed European ideas. There were actually two systems; one for the socially elite, the other for the common people. Andrew Jackson introduced new ideas into government which narrowed the social gap and hastened the acceptance of modern public education. While the double track system of public and private elementary and secondary schools has fused gradually into a single brand of education, institutions of higher learning are slow to accept this principle. The kind of cultural training which characterizes many of our colleges and universities is evidence that these schools are more concerned with social class stratification than with the education of an intellectual elite. While such institutions rest their cultural heads in the pillows of peace and plenty, the teacher-training colleges are little more than meagerly equipped normal schools. In the eyes of society it appears more honorable to teach the classics than to train teachers how to give instruction in English literature.

It has been difficult to obtain acceptance of the idea that good teachers are as important in a democracy as efficient lawyers, doctors, or dentists. In consequence, state legislatures would vote adequate appropriations to universities for the purpose of training doctors and lawyers and provide inadequate sums for the normal schools. Under such conditions one may question the truth of the household phrase that "education is dear to the hearts of the American people."<sup>1</sup>

Attempts to gain a place in the educational spotlight caused normal schools and teachers colleges to imitate the cultural colleges and universities. Fraternities and athletics sprung up. Units of credit were introduced. The training period was lengthened. Students have been recruited from the most promising high school graduates. And courses were planned similar to, if not identical with, those given in the more respected cultural institutions of higher learning.

The training of teachers in this country is almost entirely a 19th century venture. Before this time it was generally believed that the only prerequisite for teaching was some knowledge of subject matter. This view is held still by a respectable minority. Early teacher-training institutions were connected with religious academies or preparatory schools. Probably one of the first was Benjamin Franklin's Academy where teachers were trained as early as 1756. These private and ecclesiastical institutions finally received state aid for partial support.

The first normal school was established by Horace Mann in 1839. It was not until 1861, however, that the program of state normal schools became more secure with the opening of the Oswego Normal School with its new educational theory and method of training teachers. The example set by New York in founding the Albany

<sup>1</sup> W. F. Russell, *Report of the Dean of Teachers College*, 1931.



State Teachers College has been followed by numerous other states during the past fifty years. Moreover, state universities and municipal and private colleges in large numbers now have entered the teacher-training field.

Paralleling the plan used for recruiting academic teachers, the preparation of personnel for physical education began in private schools. The valuable contributions of this type by Dio Lewis, the American Gymnastic Union, Sargent, Anderson, Posse, and Arnold are common knowledge today. It is not generally known, however, that the first attempt to train teachers of physical education in a state normal school was started by Bowen at Ypsilanti in 1894, or that Washington in 1896 was the first state university to engage in this important work.

From these modest beginnings teacher preparation has enjoyed a growth which is indeed remarkable. A report issued by the United States Department of the Interior, May 1931, reveals the following data:<sup>2</sup>

TABLE I

INSTITUTIONS OFFERING A FOUR-YEAR MAJOR COURSE IN PHYSICAL EDUCATION AND ISSUING A B.S. OR B.A. DEGREE

<i>Type of Institution</i>	<i>Number of Institutions</i>
State Colleges and Universities .....	63
Private Colleges and Universities .....	77
Teachers Colleges .....	70
Total .....	210

TABLE II

INSTITUTIONS OFFERING A FOUR-YEAR COURSE AND ISSUING A B.A. OR B.S. DEGREE WITH A MINOR COURSE IN PHYSICAL EDUCATION

<i>Type of Institution</i>	<i>Number of Institutions</i>
State Colleges or Universities .....	9
Private Colleges or Universities .....	24
Teachers Colleges .....	15
State Normal Schools .....	1
Municipal Normal Schools .....	1
Total .....	50

TABLE III

INSTITUTIONS OFFERING A THREE-YEAR COURSE IN PHYSICAL EDUCATION

<i>Type of Institution</i>	<i>Number of Institutions</i>
State Normal Schools .....	4
Municipal Normal Schools .....	1
Total .....	5

<sup>2</sup> Adopted from M. M. Ready and B. F. Wolf, *Professional Courses in Physical Education for Teachers*. U. S. Department of Interior, Office of Education. May, 1931.

TABLE IV  
INSTITUTIONS OFFERING A TWO-YEAR COURSE IN PHYSICAL EDUCATION

<i>Type of Institution</i>	<i>Number of Institutions</i>
State Colleges or Universities .....	2
Private Colleges or Universities .....	6
Teachers Colleges .....	6
State Normal Schools .....	2
Municipal Junior Colleges .....	15
Private Junior Colleges .....	13
Private Normal Schools .....	12
Total .....	56

TABLE V  
INSTITUTIONS OFFERING A FEW SPECIAL ELECTIVE COURSES IN  
PHYSICAL EDUCATION (AND ATHLETICS)

<i>Type of Institution</i>	<i>Number of Institutions</i>
Colleges and Universities .....	62
State Teachers Colleges .....	7
Municipal Junior Colleges .....	1
Total .....	70

TABLE VI  
INSTITUTIONS OF HIGHER EDUCATION FOR NEGROES PROVIDING  
PROFESSIONAL COURSES IN PHYSICAL EDUCATION

<i>Type of Institution</i>	<i>Number of Institutions</i>
Colleges .....	6
Institutes .....	3
Total .....	9

From the above data it is evident that there are in the neighborhood of 400 institutions of higher learning in the United States preparing personnel for physical education. Undoubtedly, some of them would be recognized by less than half of the accepted accrediting agencies. Nevertheless, the lack of uniformity among states in certifying teachers or in accrediting schools, together with the current belief among some school superintendents that one teacher of physical education is as good as another—regardless of training—makes all graduates of these schools potential teachers in our field.

No reliable data are available concerning the number of graduates from these institutions, who annually seek positions. Again, the above data apply to undergraduate training only. The number of schools offering graduate work in physical education probably has increased ten-fold within the past five years.

Someone has said that the time is at hand when we need to study carefully the methods used in preparing teachers for physical educa-

tion. Few question the quality of a product when the demand exceeds the supply. At present there is no scarcity of licensed teachers.<sup>3</sup> When *demand* exceeds *supply* we may be satisfied with mediocrity. When *supply* exceeds *demand*, competition becomes so keen that there develops an upgrading of the entire level of the commodity.

At present we have an excellent opportunity to secure satisfactory teachers of physical education through improved methods of training. To do this, standards are essential.

Standards arise in response to confronting problems. These problems may be solved by persons in positions of authority who dictate the policies or procedures to be followed, or they may be solved by using the scientific techniques of educational research which are available. Conferences such as this are indeed helpful in defining our problems and in gaining a wider understanding of the tasks which are before us.

### Why Train Teachers Anyway?

While visiting a friend a few days ago, he asked "Why should we train teachers anyway?" This man is at the head of the school of commerce in one of our largest universities. He added, "I get along nicely except when certain professors from the college of education come over to my place and try to tell me how to use some new fangled method of teaching."

There are a goodly number of persons who oppose the training of teachers on the grounds that teachers are born and not made. "Give him a knowledge of subject matter, or skill in performing the activity," say the proponents of this plan, "and teaching techniques will take care of themselves." The opposite point of view is that what a teacher knows or the manner in which he performs is not as important as how and what he teaches. The defenders of teacher training say, "Mere knowledge or skill does not insure a mystic power to teach."

Probably the best solution for the problem lies between the two extremes, and knowledge and skill in subject matter are essential as well as teaching method. While many able teachers lack professional training, the effectiveness of these same teachers probably would be increased by an understanding of methods and procedures.

The real problem seems to be, how well can materials and methods be brought together in teacher preparation. Of course, if we knew exactly what we wanted taught and just how it should be taught, the matter would be comparatively easy. We would follow a plan similar to that of training machine operators or carpenters. Changing social conditions, however, make this type of training

<sup>3</sup> Research Bulletin of the National Education Association. *Teacher Demand and Supply*. Vol. IX, No. 5. (Nov., 1931), Chapter III.

undesirable, if not impossible. The new teacher must be a versatile leader; he must understand the deeper meanings of education and go beyond subject matter materials and courses of study.

### Responsibilities of the State Department of Education.

Even since the 10th Amendment to the Federal Constitution gave to the state the right to conduct education as it deemed expedient we have witnessed differences of opinion between state departments of education and local units pertaining to the conduct of education. In teacher preparation, colleges and universities have challenged the right of state departments to interfere with the kind of training provided. The state contends that it not only has the right but the obligation to establish standards which shall govern the training of those who expect to teach in that area. Colleges and universities, especially those financed by private endowment, hold that the state's authority should be limited to those institutions receiving financial support from the legislature. The argument is pressed that state interference inhibits private initiative; standards are too high or too low, and that the college is prevented from specializing in certain aspects of teacher preparation for which the school is especially qualified.

Possibly, the more progressive state departments of education will in the future shift the emphasis of standardization from *machinery and operation* to the *product obtained*. Perhaps *accreditation* could be based upon the degree to which an institution produces its *chosen results*, rather than upon its conformity to a series of standards or upon its *likeness to other colleges*. Some students of education hold that there is no significant difference between standards based upon *machinery and operation* and upon *product obtained*.

### Organization of Teacher Preparation as a Separate School, Department, or College of Physical Education.

There appears to be no uniformity of procedure relative to the allocation of the professional program. One group holds that the training of teachers is best conducted in a separate school of physical education with a dean in charge. In other colleges there is a department of physical education, independent of the school of education. Sometimes a dual organization exists with the department of physical education directed by the college of education and the college of liberal arts. Occasionally, the professional courses of physical education are controlled by the college of liberal arts. A common plan is to find the teacher-training program in the college of education. Which is best? Probably no one type of organization

would be universally acceptable, although there is grave doubt if all plans are equally effective.

### The Selection of Students.

At present the chief basis for selecting students is academic achievement in college preparatory courses, i. e., graduation from an approved secondary school. A few universities report that "consultation with the head of the department is required," although information about the nature of these conferences is extremely vague. Some departments require a health examination, others state that the candidate shall possess a pleasing personality and voice; a few accept only the upper third of the college sophomore class (when specialization begins during the junior year).

Investigations should assist in solving the problem by discovering the qualities essential for successful teaching. Among the factors to be evaluated the following are suggestive: evidence of good moral character; an engaging personality; an interest in physical education; graduation from an approved high school or its equivalent; freedom from organic or functional defects; superior motor capacity; better than average motor skill; possibly a pre-professional course in high school; relatively high native intelligence; relatively high scholarship in high school; and superior social ability.

Probably the increased number of training schools and the growth in enrollment justify raising the entrance standards. Again, the nature of physical education suggests that standards used to select students for academic subjects are not wholly satisfactory in this special field.

### The Curriculum in Teacher Preparation.

What two persons can agree on the type of curriculum which is desirable for teachers of physical education? Shall a major course consist of 20, 40, or 60 semester hours of work? A National Committee<sup>4</sup> reports that the range is from 24 to 50 semester hours with an average of 37, whereas language and literature range from 5 to 30 hours with an average of 12. Can a teacher of literature be trained in half the time required for a physical educator? Again, it seems strange that a student in one institution completes 20 semester hours of basic sciences while in another the requirement is 70.<sup>5</sup> One group states that 5 semester hours of educational courses—such as psychology and sociology—are sufficient, while experts at the other end of the scale hold that 24 semester hours of educational courses are essential.

And what shall we call the professional courses in physical

<sup>4</sup> Report: *Physical Education Curriculum in Professional Schools*. Committee American Physical Education Association. Chairman, J. H. McCurdy, 1929.

<sup>5</sup> These data were given by Dr. J. H. McCurdy, speaking at Cleveland in February, 1929.

education? Or is it just to show that we are different that the terms "body mechanics," "individual corrections," "posture education," "corrective gymnastics," and "body mechanics and muscle training" mean the same thing in different institutions?

Frequently, undergraduate students are urged to specialize in athletic coaching, certain forms of dancing, or a particular type of gymnastics. Advocates of the plan ask, "Why should students spend any great length of time with activities which they do not expect to teach?" Then a voice replies, "Who knows what they will be required to teach? Undergraduates should have a well-rounded program of activities. Leave specialization for the graduate school."

Growing interest in health instruction raises a whole series of problems. A number of schools attempt to equip the candidate for health teaching, as well as for physical activities. The director of a neighboring school contends that health should be taught in a separate department, like mathematics or the social studies, hence health instruction is not a part of the physical educator's job. A minority hastens forward to explain that health instruction is more closely associated with science than with physical education, so train the science teacher for health, and leave the physical educator with his gymnasium and playground equipment.

It is at once apparent that only a few of the numerous problems associated with the curriculum have been indicated. Others challenge the attention of anyone interested in reviewing present conditions. An innovation which gives considerable promise is the substitution of *units* or *blocks* of work for specific courses. Such a plan makes possible the grouping together of associated types of subject matter in a more logical manner, and prevents padding courses so as to conform to semester-hour organization.

### **The Qualifications of Teachers Who Give Professional Courses.**

Diversified practices throughout the country make it impossible to indicate present standards relating to the qualifications of those who train teachers. To be sure most of them are college graduates. A reasonably large number of them have completed at least one year of work in their chosen field after graduation. Some states have made this a minimum requirement. The level of professional training among those who are preparing teachers is rapidly rising due, perhaps, to the number of persons entering the field, and to improved supervision by state, college, and regional accrediting authorities.

It is not uncommon, however, to find a person training teachers to teach games, stunts or apparatus who has had no preparation for teaching these activities. This fact has raised serious comment among the students, themselves, as well as by others who ask the somewhat embarrassing question, "Why does one need special



preparation to teach in the public schools but none to teach in teacher-training institutions?" With that, we will rest the case of qualifications for those who teach professional courses.

### Facilities and Equipment.

This topic is so closely associated with the curriculum and personnel that the principles affecting them apply here. Consequently, we will pass on without further comment.

### Practice Teaching.

Differences of opinion arise about the practice school. In some colleges, training precedes practice, in others training and practice proceed concurrently. A few persons have contended that a certain amount of practice should come before training takes place, so that the candidate will interpret his training in terms of actual teaching situations.

Undoubtedly, there are arguments to support each point of view. Unfortunately, no one knows which method is best. How can we show teachers the best method of teaching children when we do not know the best method of training teachers?

Standards of the National Education Association relating to practice teaching are:<sup>6</sup>

1. Every student graduating from a teachers' college shall have 90 hours of practice teaching under supervision.
2. For every 18 college students given 90 hours of practice teaching, there shall be a minimum group of 30 children, either in campus training schools or in affiliated urban schools under the direction of the college.

Adequate facilities for practice teaching represent one of the weaknesses in our training program. It is worthy of note that conditions are gradually improving. The tendency persists, however, of allowing students to substitute work with college intramural athletics for time spent in regularly authorized practice schools.

### The Classification of Teacher-Training Institutions and the Certification of Teachers.

It is evident that this discussion must close with the consideration of one more problem. To be sure the topic of teacher preparation involves questions left untouched by this hasty survey; the placement and follow-up of teachers, plans for in-service training, the minor instead of the major in physical education, problems of graduate training, and physical education for elementary classroom teachers, are especially important and should be included if time permitted.

Methods of certifying teachers and classifying or accrediting

<sup>6</sup> Proceedings of the N. E. A. Vol. 64, p. 844.

training institutions go hand in hand. If the school is approved, its graduates are certified, and if a graduate is certified he is allowed to teach. Having accepted this truism the question arises, "How is it to be done?" And here controversy begins.

One person boldly asserts, and not without some basis for his pronouncement, "If the preparation of teachers is a state function, then each state is to establish the bases for accrediting its schools and certifying its teachers." "But," inquires a friend, "what is to be done about persons trained in one state who seek positions in other parts of the country?" "The answer to that question is quite simple," remarks the former, "reciprocity is practiced between states having similar standards of accreditation."

In the midst of this heated discussion, someone makes a plea for Federal licenses, similar to the proposal of the American Medical Association. Opponents of this plan point out that the two situations are not analogous, since the preparation of teachers is a state function whereas the training of doctors is not primarily a state responsibility, although the state does exercise authority in licensing the physician.

Even among the group favoring the establishment of nationwide standards for the accreditation of all schools, the question is raised, "Who shall classify the colleges and universities?"

It is suggested that since the American Medical Association established standards for the medical schools, we might look to the American Physical Education Association, as the parent body, for standards in our field.

"The American Physical Education Association should not make the study," asserts someone, "any more than the American Medical Association set up the standards for medical schools. The Carnegie Foundation conducted the research and established the standards." "I should like to see," continues the speaker, "this same Carnegie Foundation study the field of physical education and prepare bases for classifying our training schools."

At this point those who favor the amalgamation of the American Physical Education Association with the National Education Association remind us that physical education is a part of general education, and that there is a national survey of teacher education now in progress.<sup>7</sup> It is suggested that this survey committee be requested to establish more definite standards for the training of teachers in physical education.

By this time the discussion has become a "free-for-all" and someone informs the group that the president of the Department

<sup>7</sup> Report: *Medical Education in the United States and Canada*. Carnegie Foundation for the Advancement of Teaching. Bulletin 24. 1910.

<sup>8</sup> This survey is authorized by a legislative appropriation of \$200,000. It is being conducted by the Office of Education, U. S. Department of Interior. Dr. E. S. Evenden of Teachers College is the Associate Director.

of School Health and Physical Education of the National Education Association already has appointed a committee "whose duty it shall be to initiate the formulation of standards to be met by teacher-training institutions which desire to be placed on an accredited list for training physical education teachers."<sup>9</sup>

Still another point of view would favor working with the American Association of Teachers Colleges. The influence of this organization affects the preparation of teachers everywhere, and is not confined to state lines. It already has standards such as the following:

1. A school devoted exclusively to teacher training.
2. At least on four-year unified curriculum.
3. Legal authority from the state to grant a Bachelor's degree.
4. It must have granted and continued to grant some degree.
5. Require for admission graduates from a standard four-year high school or its equivalent.
6. A library adequate for the needs of students in training.
7. An endowment sufficient to insure the continuance of teacher preparation.
8. A staff which is trained professionally.

Undoubtedly, there are other points of view which should be thrown into the general picture.

In conclusion it may be stated that the field of teacher training in physical education assumes a position of paramount importance. Apparently we have passed the elementary or hand-craft stage. We are now in the period of improving our physical education offering by a more careful study of teacher-training methods. To do this effectively we must have certain procedures and levels of achievement clearly established and defined. Call them standards if you will, or any other term which connotes a similar meaning. In a practical sense we want to serve the employer, the student, the college and the profession. The employer—school superintendent, head of a department, or college president—has a right to be protected against teachers whose training is decidedly inferior, but who presents credentials as having graduated from a major course in physical education. The high school graduate, contemplating physical education as a profession, has a right to expect that the college offering a major course will give him the type of training he deserves. The college or university endeavoring to provide adequate training for its students has a right to be protected from the "diploma mills" which flood the teaching market with an inferior product. And lastly, the profession of physical education, with its contribution to the happiness and service of youth, deserves the most efficient leadership which professional training can give.

<sup>9</sup> Quoted from a letter written by N. P. Neilson as chairman of this committee to state directors who comprise this group. Dated December 14, 1931. Mr. Neilson adds, "After corresponding with Dr. Nash (President) on the matter we have agreed that the state directors are no doubt tremendously interested in the problem, and perhaps would be less biased in suggesting the standards than any other possible group."

# Methods Used in Upgrading Medical Education

By F. W. MARONEY, M.D.  
*Teachers College, Columbia University*

THE study and practice of medicine have always intrigued man. Ignorance and superstition were both forces to be contended with in the early centuries of medical progress. But slowly and surely science has taken the place of beliefs based upon tradition fallacies. Yet even today with all that is known by the well-trained physician, surgeon or laboratory worker in the methods that are sound in the treatment of disease, there are large groups of people belonging to religious sects, faith healing organizations, and indeed therapeutic nihilists who scoff at the physician's claims and make little of his success in the field of scientific research.

Yandell Henderson has written the following relative to his faith in medicine.

"To overthrow superstition, to protect motherhood from pain, to free childhood from sickness, to bring health to all mankind:

"These are the ends for which, through the centuries, the scholars, heroes, prophets, saints, and martyrs of medical science have worked and fought and died."

Medical history has acquainted physicians and well-read laymen of the contribution made by outstanding leaders in the conquest of disease, the alleviation of suffering and pain and the raising of health standards in the community that have markedly contributed to the health and happiness of all people. The names of Hippocrates, Galen, Celsus, Semelweiss, Pasteur, Koch, Metchnikoff, Lister, Harvey, Jenner, Walter Reed, Oliver Wendell Holmes, Long, Morton, Naguchi, Banting, Curie, and a host of others are connected with the unselfish promotion of human welfare.

Why then should there be any necessity for upgrading education in a profession that is and always has been primarily devoted to service rather than monetary gain? The answer I believe is twofold. First to encourage well-trained, high-minded and devoted students to enter an honored profession whose standards and ideals appeal to the best in young men and women, and second to rule out the unfit; to control and when necessary outlaw institutions of low rank, founded for private gain, i. e., poorly equipped, understaffed colleges lacking in real entrance requirements, adequate libraries, and hospital facilities.

"Medical Education in the United States began, and for many years continued to exist, as a supplement to the apprenticeship system still in vogue during the seventeenth and eighteenth centuries. The likely youth of that period, destined to a medical career, was at an early age indentured to some reputable practitioner, to whom his service was successively menial, pharmaceutical, and professional: he ran his master's errands, washed the bottles, mixed the drugs, spread the plasters, and finally, as the stipulated term drew towards its close, actually took part in the daily practice of his preceptor—bleeding his patients, pulling their teeth, and obeying a hurried summons in the night. The quality of the training varied within large limits with the capacity and conscientiousness of the master. Ambitious spirits sought, therefore, a more assured and inspiring discipline."<sup>1</sup>

Early in the eighteenth century many adventurous students went to Europe and took work in the large hospitals in Paris, London and Edinburgh. Upon their return they helped to raise standards in this country. In 1765 the trustees of the College of Philadelphia created a professorship in the theory and practice of medicine. The medical department of King's College in New York opened in 1768. Harvard College offered courses in 1783, and Dartmouth College in 1798.

"Between 1810 and 1840, twenty-six new medical schools sprang up; between 1840 and 1876, forty-seven more;<sup>2</sup> and the number actually surviving in 1876 has been since then much more than doubled. First and last, the United States and Canada have in little more than a century produced four hundred and fifty-seven medical schools, many, of course, short-lived, and perhaps fifty still-born. One hundred and fifty-five survive today. Of these, Illinois, prolific mother of thirty-nine medical colleges, harbors in the city of Chicago fourteen; forty-two sprang from the fertile soil of Missouri, twelve of them still "going" concerns; the Empire State produced forty-three, with eleven survivors; Indiana, twenty-seven, with two survivors; Pennsylvania, twenty, with eight survivors; Tennessee, eighteen, with nine survivors. The city of Cincinnati brought forth about twenty, the city of Louisville eleven. These enterprises—for the most part they can be called schools or institutions only by courtesy—were frequently set up regardless of opportunity or need: in small towns as readily as in large, and at times almost in the heart of the wilderness. No field, however limited, was ever effectually preempted. Wherever and whenever the roster of untitled practitioners rose above half a dozen, a medical school was likely at any moment to be precipitated. Nothing was really essential but professors. Little or no investment was therefore involved. A hall

<sup>1</sup> Carnegie Foundation Bulletin No. 4.

<sup>2</sup> Carnegie Foundation Bulletin No. 4.



could be cheaply rented and rude benches were inexpensive. Janitor service was unknown and is even now relatively rare. Occasional dissections in time supplied a skeleton—in whole or in part—and a box of odd bones. Other equipment there was practically none. The teaching was, except for a little anatomy, wholly didactic. The schools were essentially private ventures, money-making in spirit and object. A school that began in October would graduate a class the next spring; it mattered not that the course of study was two or three years; immigration recruited a senior class at the start. Income was simply divided among the lecturers, who reaped a rich harvest, besides through the consultations which the loyalty of their former students threw into their hands."

**I**N 1910, the Carnegie Foundation for the Advancement of Teaching undertook the study of Medical Education in the United States and Canada under the able direction of Abraham Flexner.

The Flexner Committee visited and studied every medical school in the country. The study involved:

1. The proper basis of medical education.
2. The actual basis of medical education.
3. The course of study: the laboratory branches.
4. The financial aspects of medical education.
5. Medical sects.
6. The state boards.
7. The postgraduate school.
8. The medical education of women.
9. The medical education of the negro.

The significant facts revealed by this study were:<sup>3</sup>

(1) For twenty-five years past there has been an enormous over-production of uneducated and ill-trained medical practitioners. This has been in absolute disregard of the public welfare and without any serious thought of the interests of the public. Taking the United States as a whole, physicians are four or five times as numerous in proportion to population as in older countries like Germany.

(2) Over-production of ill-trained men is due in the main to the existence of a very large number of commercial schools, sustained in many cases by advertising methods through which a mass of unprepared youth is drawn out of industrial occupations into the study of medicine.

(3) Until recently the conduct of a medical school was a profitable business, for the methods of instruction were mainly didactic. As the need for laboratories has become more keenly felt, the expenses of an efficient medical school have been greatly increased. The inadequacy of many of these schools may be judged

<sup>3</sup> Carnegie Foundation Bulletin No. 4.



from the fact that nearly half of all our medical schools have incomes below \$10,000, and these incomes determine the quality of instruction that they can and do offer.

Colleges and universities have in large measure failed in the past twenty-five years to appreciate the great advance in medical education and the increased cost of teaching it along modern lines. Many universities desirous of apparent educational completeness have annexed medical schools without making themselves responsible either for the standards of the professional schools or for their support.

(4) The existence of many of these unnecessary and inadequate medical schools has been defended by the argument that a poor medical school is justified in the interest of the poor boy. It is clear that the poor boy has no right to go into any profession for which he is not willing to obtain adequate preparation; but the facts set forth in this report make it evident that this argument is insincere, and that the excuse which has hitherto been put forward in the name of the poor boy is in reality an argument in behalf of the poor medical school.

(5) A hospital under complete educational control is as necessary to a medical school as is a laboratory for chemistry or pathology. High grade teaching within a hospital introduced a most wholesome and beneficial influence into its routine. Trustees of hospitals, public and private, should therefore go to the limit of their authority in opening hospital wards to teaching, provided only that the universities secure sufficient funds on their side to employ as teachers men who are devoted to clinical science.

Dr. Henry S. Pritchett in writing the Introduction of the Committee report, states:

"The development for medical education is conditioned largely upon three factors: first, upon the creation of a public opinion which shall discriminate between the ill-trained and the rightly trained physician, and which will also insist upon the enactment of such laws as will require all practitioners of medicine, whether they belong to one sect or another, to ground themselves in the fundamentals upon which medical science rests; secondly, upon the universities and their attitude towards medical standards and medical support; finally, upon the attitude of the members of the medical profession towards the standards of their own practice and upon their sense of honor with respect to their own profession.

"These last two factors are moral rather than educational. They call for an educational patriotism on the part of the institutions of learning and a medical patriotism on the part of the physician.

"By educational patriotism I mean this: a university has a mission greater than the formation of a large student body or the attainment of institutional completeness, namely, the duty of loyalty to the standards of common honesty, of intellectual sincerity, of scientific accuracy. A university with educational patriotism will not take up the work of medical education unless it can discharge its duty by it; or if, in the days of ignorance once winked at, a

university became entangled in a medical school alliance, it will frankly and courageously deal with a situation which is no longer tenable. It will either demand of its medical school university ideals and give it university support, or else it will drop the effort to do what it can only do badly.

"By professional patriotism among medical men, I mean that sort of regard for the honor of the profession to rise above the consideration of personal or of professional gain. As Bacon truly wrote, 'Every man owes a duty to the profession,' and in no profession is this obligation more clear than in that of the modern physician. Perhaps in no other of the great professions does one find greater discrepancies between the ideals of those who represent it. No members of the social order are more self-sacrificing than the true physicians and surgeons, and of this fine group none deserve so much of society as those who have taken upon their shoulders the burden of medical education. On the other hand, the profession has been diluted by the presence of a great number of men who have come from weak schools with low ideals both of education and of professional honor. If the medical education of our country is in the immediate future to go upon a plane of efficiency and of credit, those who represent the higher ideals of the medical profession must make a stand for that form of medical education which is calculated to advance the true interests of the whole people and to better the ideals of medicine itself.

"There is raised in the discussion of this question a far-reaching economic problem to which society has as yet given little attention; that is to say, What safeguards may society and the law throw about admission to a profession like that of law or of medicine in order that a sufficient number of men may be induced to enter it and yet the unfit and the undesirable may be excluded?"

THE outcomes of this epoch making study, the reading of which I suggest to all who have not had that privilege, were first, the classification of medical schools as A, B, or C institutions according to standards of entrance requirements, courses of study, endowment, staff, teaching facilities, library, hospital connections, etc.; second, the voluntary and forced closing of those colleges that could not meet the standards set up; and third, the awakening of the public to the importance of good schools, efficiently conducted, and well supported for the education of physicians who by birth, breeding and brains are qualified to help mankind.

# Methods of Improving the Professional Preparation of Teachers

By JAMES EDWARD ROGERS  
*National Physical Education Service*

THE professional preparation of teachers of health and physical education may be improved in many ways, but it would be well to concentrate on one suggestion—the need for setting up standards for teacher training institutions and the organization of an American Association of Teacher Training Institutions Preparing for Physical Education so that these standards will become effective.

There are now over 400 universities, colleges and teacher training institutions preparing teachers in two, three and four year courses. The two and three year courses are rapidly disappearing. There are over 215 institutions now giving four year major courses granting degrees for physical education. These institutions vary greatly in their plant, equipment, facilities, staff and courses of study. They have sprung up in great numbers in the past few years. Most of them are prepared to give a decent training; some are not. The problem is quite clear. To appreciate this problem an outline of the following factors will help:

1. For the past ten years, 1920 to 1930, there has been a remarkable growth in physical education and the employment of physical education teachers. No subject in education has progressed more rapidly.
2. Practically every modern junior and senior high school has been equipped with indoor and outdoor facilities—gymnasiums and play fields—which demand trained teachers.
3. In the past ten years there has been practically 100% growth in the number of physical education teachers. In 1920 there were approximately 10,000; in 1930 roughly 20,000.
4. This steady demand for trained physical education teachers has increased the number of institutions preparing teachers. In 1920 only a few public institutions were doing this. Ten years ago most of the institutions were private schools. Today practically every state university and many state teachers colleges give majors and minors. In one state there are fifteen institutions giving four year courses with large enrollments. In another state in a sparsely populated section

of the country with a small demand for physical educators, eight state teachers colleges are planning four year courses. It will be impossible to absorb the graduates.

5. It is roughly estimated that 4,000 teachers in physical education graduated last year.
6. In 1920 the demand was greater than the supply. This past year, 1930, it seemed in many cases that the supply was greater than the demand. Many could not get positions; there were many applications for one job. Here is a problem of over-production the same as in the teachers' field and in industry. Each year there will be a steady demand for teachers, but not in the proportion of the sudden spurt and increase during the past ten years.

Is there not a need now to take inventory; realize that there is a greater supply than demand; that many institutions are not prepared to give majors; that in some states there are too many trying to fill this field, some equipped for the purpose and others not so well equipped?

*Is there not a need for us to protect—*

1. The superintendent who hires? Should he not have a list of institutions that have adequate facilities and programs so that he knows he is getting properly trained and prepared people?
2. The graduates who are seeking jobs? At present, persons graduating from the best schools have no better chance than the persons who come from the institutions which lack facilities, programs and faculties.
3. The institutions that have high standards? It seems to me that there is a need for setting up standards for teacher-training institutions and to classify them as was done for the medical schools.

It seems that it might help to form an American Association of Institutions Teaching Physical Education similar to the American Association of Universities and Colleges. Any institution meeting the standards set up by this American Association would be accepted. These standards would cover such items as

1. facilities; 2. faculties; 3. courses of study; 4. certification requirements; etc.

In this way the superintendent who hires the applicant from a good school seeking a position and the institutions with high standards would both be protected.

Another need in the improvement of professional preparation of teachers is the preparation of physical education teachers in

academic minors, but this is another problem—however, a very important one.

There are four national groups interested in this problem of up-grading the professional preparation of teachers:

1. The Society of Directors of Physical Education in Colleges.
2. The State Directors of Physical and Health Education.
3. The American Physical Education Association.
4. The National Education Association through its Department of School Health and Physical Education.

# Report of the Committee on High School Administrative Standards for the Department of Physical Education

By J. B. NASH, Ph.D., *Chairman*  
*New York University*

**I**N considering this problem, four types of objectives might be formulated in terms of minimum and recommended standards. These objectives are as follows:

- I. *The Child's Objective.* The child's objective is obviously the activity itself. He has no interest in standards as such. The full reward comes from mere participation.
- II. *Society's Objective.* Society has a definite objective for those participating in activity. It is only by upholding standards in connection with this objective that society can preserve itself. Hence, leadership becomes an objective both from the standpoint of protecting and guiding the individual.
- III. *Teacher's Objective.* The teacher largely represents the agent through which society must accomplish its objectives. The teacher also has day to day objectives. These objectives will have to do specifically with standards of achievement and hence would have to be adjusted to age interest and capacity of the individual. Standards in this field will have to do with skills on the various levels of development—neuro-muscular, interpretive and emotional-impulsive.
- IV. *Administrative Objective.* Standards in this field will have to do with items which make possible an adequate teaching procedure, namely, facilities, space, equipment and supplies in which to conduct and administer activities, time in which to administer them, a classified problem, a classification of children and leadership.

At a meeting in Detroit of the committee appointed by the State and College Directors, it was assumed that the last two sets of objectives were the ones which have been referred to the committee. The committee was unanimous in the feeling that it should not attempt to report on the third group but it should confine its efforts to No. IV, namely, "*Administrative Standards.*" This report



then has to do with administrative standards—purely quantitative standards.

### Standards in a Secondary School Physical Education Administration

(To be considered from the standpoint of possible accredited high schools and the granting of college entrance credit in physical education.)

I. *Plant.* Obviously facilities, space, equipment and supplies, must be provided for a program in physical education. This space should be thought of in terms of the following units: (A) Instructional Unit, (B) Service Unit, (C) Administrative Unit.

A. *Instructional Unit.* The instructional unit should consist of all the places where teaching takes place—gymnasium floor, special exercise rooms, athletic fields, classroom. (NOTE: I am listing the following only in terms of minimum standards asking the committee to make changes and suggest recommended standards.)

#### 1. *Gymnasium plant.*

a. *Enrollment.* In general, estimates of space, time and leadership are being made upon the basis of classes of forty in which the instructor teaches five periods a day and the assumption being that a class can operate indoors at the same time another class is operating out-of-doors. In case of inclement weather the out-of-door class is to use the classroom. 250 should constitute a teacher-load. Upon this basis in an eight period day the teacher would have to teach five periods—one period for rest, one period for consultation and special procedures, one period for the principal's assignment. Two of these periods might be assigned by the principal to after-school coaching.

*0 to 150.* One exercise floor, 45 by 80, one field 3 acres, one standard classroom.

*150 to 400.* One exercise floor, 60 by 90 with sound-proof partition, one field 4 acres, one standard classroom.

*400 to 600.* One exercise floor divided as above, two fields, one 3 acres, one 4 acres, one standard classroom.

*600 to 800.* Two exercise floors, 60 by 90 divided as above, two fields, 4 acres and one 5 acres, two standard classrooms.

B. *Service Unit.*

1. Locker provisions should be made on the individual locker plan, 7x18x36, or the basket plan for an *individual storage* place for each student and a *place to dress* when preparing for activity.
2. *Lavatories.* Lavatories and washrooms should be provided adjacent to the lockers.
3. *Showers.* The following formula should apply to the number of showers.

$$\text{Boys } \frac{\text{peak load—10\%}}{4}$$

$$\text{Girls } \frac{\text{peak load—20\%}}{3}$$

- C. *Administrative Unit.* Office space should be provided for each director and so equipped for consultation of students. In addition, there should be an office supply room, rest room for girls and a health unit arranged for the first aid, and doctor's, dentist's, nurse's rooms.

Outer office and storage—10x10

Each director—private—8x8

- II. *Classification of Children.* Children should be classified in some standard way (the school year will have to be used in most instances) so that classes will be fairly homogeneous. After this first rough grouping children should be classified within the group in accordance with achievement. In a small high school, the latter classification would be the only one used. Provision should be made for individuals who differ unduly from the norm.

- III. *Classification of Activities.* A program of activities in physical education should be graded in such a way that achievement in a single year is built upon the achievement of previous years. In classification of activities special attention should be given to their contributions—organic, neuro-muscular, impulsive and emotional developments.

- IV. *Time.*<sup>1</sup> Five sixty-minute periods shall be considered the

<sup>1</sup> Upon the basis of the above, the Committee recommends two units of credit for the four years' work. If the total time falls below 200 minutes per week, but is above 100 minutes per week, the Committee recommends one unit. While five 60 minute periods should be considered the base, the Committee is willing to recognize four periods of 50 minutes or five periods of forty minutes which would accumulate as follows:

4 periods, 50 minutes— $200 \times 40$  weeks—800 minutes

5 periods, 40 minutes— $200 \times 40$  weeks—800 minutes

The suggestion is that the above be subdivided as follows: two periods per week—instruction; two or three periods per week—laboratory under supervision. Where four periods per week are listed it is recommended that the extra period be used for the correlation of health and character outcomes. This brings the physical education time

bases. One of these periods should be given to organization for health and character results. After-school intramural or in-school athletics shall be considered the equivalent to two of these periods to be carried on under supervision.

- V. *Leadership*. Leaders should be certified by methods approved by the state and no one allowed to teach physical education who has not had special preparation and not at least taken a minor in the field.

*Committee Members*

J. Herbert Nichols      Clifford Brownell      Jay B. Nash, Chairman

*Consultants*

Gertrude Moulton

N. P. Neilson

Carl Schrader

C. L. Glenn

William LaPorte

W. F. Meredith

Harry A. Scott

---

in line with the Carnegie Unit of Science which requires for a week 120 minutes lecture, 80 minutes laboratory; this probably involves at least 80 hours preparation which makes a total of 280 hours or 1,680 minutes.

# Report of the Committee on Curriculum Research

By PROFESSOR W. R. LAPORTE, *Chairman*  
*University of Southern California*

## I.

### Present Status of Study

THE fourth year of study by the Curriculum Research Committee has not been highly productive of statistical data or of other concrete results as in former years. It has been more a period of marking time while securing better bearings. It has seemed inadvisable to launch into further intensive statistical study until a definite agreement could be reached as to the most fruitful method of procedure to be followed. Naturally there is bound to be difference of opinion among members of the committee and members of the Society as a whole as to the best methods of approach in research work in such a field. It has seemed highly essential to iron out these differences before taking further steps.

The chairman accordingly has conducted extensive correspondence with members of the committee and with other members of the society, in an effort to secure a reasonable amount of agreement. It is rather surprising how varied are the opinions as to what the next steps in the study should be. In a sense, however, this might be expected in view of the fact that the whole field of research work in physical education is so undeveloped and so unstable, and in further view of the fact that the entire field of physical education, curriculum, technique, objectives, etc., is in such an unsettled and chaotic state. The physical education program, as we note, has developed so rapidly and so spontaneously, that it lacks that fine gold thread that should bind it together around a centralized theme. Aims, objectives, teaching procedure, administrative standards, content of subject matter vary almost from the sublime to the ridiculous. There is no continuity or uniformity and very little gradation of program material. As a consequence, any effort at curriculum construction is bound to flounder about in an uncharted sea.

Curriculum, as such, is irretrievably bound up with all other aspects and phases of physical education as well as of general education. The simplest of conclusions in this field must be based on dozens of assumptions in closely related fields in order to have

a semblance of scientific accuracy. Most of these related assumptions are lacking objective proof, hence, as a consequence, any assumptions in curriculum have an uncertain foundation.

It was with this general thought in mind that the chairman first suggested the project of the curriculum research by the Society. It was not his expectation that the Society could develop a standardized curriculum in a few years. Rather it was hoped that some order might be brought out of the present chaos of curriculum content and a foundation laid from which a more intensive research study could be carried on. It was with this objective in mind that the relative evaluation of subject matter content was undertaken as the first step in the procedure. No objective criteria were available to serve as a basis for making such evaluation and it seemed unlikely that such criteria could be established without many years of painstaking study. The next best substitute seemed to be a cross section of expert opinion of highly trained leaders in the field based on a combination of subjective analysis and objective experience over a period of many years. It was assumed that the practices followed by these leading experts would naturally be based on extensive studies of child psychology, child interests, and child needs, physical, mental and social, and that the trial and error method would have resulted in a reasonable selection of so-called "best" activities for different age levels to secure desired social, mental and physical results.

The general justification for the procedure followed in securing personal opinion ratings was on the basis that opinions of experts in a limited field should have far greater weight in determining an educational program than should the immature opinions of individuals of mediocre training and limited experience. In a similar manner it was assumed that the grouped opinion of a number of such experts would be more representative than any one individual opinion and that a program based upon such composite opinions would prove educationally more sound than a curriculum usually established in terms of the personal opinions of individual school administrators.

It was on this assumption that the committee made the detailed survey and tabulation of expert opinion. The procedure obviously has many weaknesses, but it seemed a good first step in the study.

## II.

### A Review of the Committee's Work for the First Three Years

Before going further with an analysis of procedures, it may be well to review briefly the accomplishments of the committee during the past three years, so that the members will have the study fresh in their minds. It will be recalled that the first year of study was

based on the opinions of the members of the College Directors' Society with additions of a number of prominent state and city physical education administrators. One of the earliest conclusions in this study was that a college program could not be formulated scientifically except in relationship to a high school and grade program. As a consequence, the study during the second and third years was expanded to include all grades of school and the selected raters were distributed over carefully checked supervisors in the various grades, each rating only that division in which he was a specialist. This extensive program was made possible by the close cooperation of members of the State Directors' Society each of whom assisted in the selection of experts in his particular state.

The second year's report covered only the college division, while the third year's report presented the findings for the remaining grades from the first to the twelfth and summarized the results for all grades.

Members of the society will recall that the original project called for five main objectives:

1. Formulation of a set of constituent elements to compose a comprehensive educational program of physical activity.
2. Evaluation of each of these activities in terms of its developmental contribution educationally.
3. Evaluation of these various elements in relation to each other to determine the relative amount of time to be assigned in the program to each one.
4. Evaluation of these elements in relation to the age of the child so as to determine grade placement of activities by grades or school division.
5. Determination of a minimum set of standards that should be considered essential in an all-round program of physical education.

The first two only of these objectives have been considered up to date. The last three remain to be considered along with many others of a related nature that have developed in the meantime.

The second objective, evaluation of the developmental contributions of each activity, has received the greatest amount of attention in the study. Members will recall that this evaluation was based on the potential contribution of an activity to five major needs of the individual:

1. The physical or organic growth and development and improvement of body function.
2. The development of sound social and moral qualities characteristic of a good citizen.
3. The development of sound mental and emotional attitudes as a result of stimulating and satisfying activities.



4. The development of general and special skills valuable in self-protection and the protection of others.

5. The development of skills valuable as carry-over hobbies for leisure-time use.

Each of these was considered an outstanding educational need at the present time through which physical education might make a positive contribution on a large scale.

The reason for distributing the evaluation over five elements instead of accepting a general estimate was to insure a careful analysis by each rater of the contributions to be made by each activity. It was feared that if a general estimate was called for, the tendency would be to over-stress some one aspect of an activity's contribution and rate it accordingly high or low without giving consideration to the other important elements. The all-round contribution of the activity was then determined by taking an average of the five items mentioned in each case.

The final conclusions and statistics based on the three years' study were presented in detailed form in the proceedings of the society for 1930 and appeared also in the March 1931 number of the *RESEARCH QUARTERLY* of the American Physical Education Association. Members are referred to the detailed printed report for a complete presentation of the findings.

It seemed desirable, if possible, to secure cooperation from the National Education Association in the continuance of the study and the chairman accordingly submitted the findings to the research division of the N. E. A., asking for criticism and suggestions. A recent reply from Mr. Frank W. Hubbard, Assistant Director of the Research Division, states that they have no suggestions or criticisms to make of the research technique followed and that they consider the report to contain very valuable material which should be made available for all elementary and secondary school principals and administrators. They evidenced a willingness to cooperate in disseminating this information. The chairman of the committee hopes to work with them extensively during the coming year.

A careful study of Table I, of the committee report, together with the conclusions, found on pages 172 to 174, of the *RESEARCH QUARTERLY* for March, 1931, will give the members a good condensed picture of the summarized findings as adapted to various school divisions and grades. It will also point out practical uses of the findings. It will be noted, however, that these results do not help in the solution of the original projects 3, 4, and 5, dealing with the grade placement and relative amount of time to be devoted to each activity. It will be noted that some of the activities received a very high rating in all grade and school divisions. Swimming and diving, for example, received a ranking of first in upper grammar grades,

junior high, senior high and college, with a ranking of fourth in the elementary division. This would indicate a feeling that swimming and diving could be included in the program in all grades to great advantage.

One of the purposes of the curriculum study, however, is to get away from the present glaring fault of repeating year after year, the same activity from grade to grade. Hence, one of the next major steps in the study will be to determine by some reasonable method in what grade or school division certain activities can make their greatest and most valuable contribution, and to place them accordingly. This may have to be done more or less arbitrarily. Even so, however, it should be done in order that we may establish a reasonably well graded program without too much repetition and overlapping. Similarly it will be very difficult to determine the relative amount of time to be devoted to each activity in the curriculum for the entire school distribution, as well as in the program for a given school or grade division. Here again it may be necessary to use somewhat arbitrary methods as a temporary procedure with the expectation that the classification and time allotment could be refined and modified by later more elaborate scientific study.

In addition to the study this year of procedures to be followed, the chairman carried on several statistical studies with the assistance of graduate students at the University of Southern California in an effort to lay the foundation for additional expansions of the curriculum study. Most of these parallel studies are still incomplete and therefore at this time cannot be submitted in this report in statistical form.

One of these studies consists of an analysis of state and large city courses of study in an effort to find out the general practice in the placement of the various activities by grades and school divisions. Up to date about twelve state courses of study and eighteen city courses have been surveyed and statistics tabulated. The findings are not yet sufficiently complete to be significant, but in general most of the activities seem to follow a placement fairly parallel with the evaluation estimated in the last year's study of the curriculum research.

There are a few exceptions, however, where heavy emphasis is placed on activities which received rather light emphasis in the evaluation study. For example, the majority of the courses of study give rather a large place in all school divisions to free exercises. Similarly, emphasis is given to hand apparatus, and still more so to marching. Each of these three received very low rating in the curriculum study, but they constitute one of the heaviest elements in present practice in most states. The majority of the remaining

activities do not show any marked deviations from what might be expected in the evaluations resulting from our study.

The chief purpose of this particular analysis is to find out if there is any marked agreement in the various states as to the placement of activities by grades or school division. In most cases there is a noticeable repetition of the same activities in grade after grade and it can be questioned whether each grade offers distinctly new material. The chairman hopes to have this study carried on more elaborately during the coming year as an additional related item in the curriculum research.

The chairman has also conducted several experimental studies with the aid of graduate students dealing with an analysis of specific objectives in physical education and in general education; of general and specific techniques in physical education; and of possible achievement standards. He hopes to set up a definite set of objectives, principles, techniques and achievement standards that can be used as modifying factors in the determination of a detailed curriculum. These studies should be completed for inclusion in the report for next year.

Dr. Oktavec at the College of the City of Detroit has also been carrying on some experimental work with the aid of graduate students in curriculum construction, dealing chiefly with an attempt to determine the specific aims and philosophy of physical education, together with an analysis of the specific skills and attitudes as desirable outcomes of the physical education program, together with the specific teaching situations which might well contribute to these outcomes. The findings of these studies should also be completed to include in the next year's report. These studies will also be supplemented by others to be proposed later in this report.

### III.

#### Criticisms of Proposed Procedures

It seems appropriate at this point to give consideration to some of the general criticisms that have developed as to acceptable procedure in the research technique. Some of these have come from correspondence and some from general discussion with members.

1. *The criticism that group judgments as averages are not sound.* This opinion is rather general, and in the main is a good criticism. This has been recognized, however, in the report submitted heretofore and the limitations placed on the procedure seem to protect it reasonably well. Such a plan is bound to be influenced by traditional viewpoint to a large extent and of course does not

represent the most progressive or best judgment plan. Even though it is not the best technical approach, however, it seemed essential to get some order out of chaos, that a reasonable degree of agreement be established among leaders in the field. If such a plan could result in the establishing of a reasonably systematic program, ending the present needless repetition, it would be justifiable, even though such a program might have to be changed radically from time to time when improved research procedures developed greater refinements.

2. Supplementing this criticism is the one that *there is danger of our organization going on record with assumptions* that might be considered facts but which actually are merely opinions. There is this danger to be sure, but the committee has attempted in the preceding publication to guard against it by warning that the statistical findings are not objective, but are merely the cross section of subjective opinion.

3. A similar criticism is that *current opinion is not necessarily an indication of correct procedure*. This again is a sound criticism but at the same time it must be admitted that a cross section of the best opinions of a large number of outstanding leaders is more likely to be correct than the indifferent opinion of the untrained person or even of a few well trained persons. It would be highly desirable to be sure to have a few outstanding leaders who could give a great deal of time to intensive research study to discover the most perfect method. We need, at the same time, however, to have a general to organize our present "Coxey's army" program into a semblance of order and system. The outstanding leader as a scout is essential to point the way for the future but we must be organized *now* as well. In addition we must not overlook the fact that the cloistered research worker frequently will deduce conclusions that will not fit in with the practical applied situations in the field. This, in a sense, has been one of the most marked weaknesses in past educational practice.

4. Another criticism was that *the opinion of teachers is not as valuable as would be the opinions of children themselves* based on a check list of interests and abilities. It seems very doubtful, however, whether a check list of the interests of children would give as sound a basis for determining the selection of activities as does the opinion of experts who are familiar not only with children's interests but also with their needs. As a matter of fact, the interests of children are determined very largely by their experiences and the child who has been acquainted with only a few activities will not be able to speak intelligently regarding those with which he is not familiar. In all probability he will not be interested in them

because he does not know them from experience. The best that could be hoped from such a study would be the securing of a variety of interests stated in terms of the experiences of groups in various parts of the country. The chances are that this would not be as true a picture of combined interests and needs as would the judgment of experts in the field. It would, of course, be an additional item of interest to be considered.

5. Criticism has been made *that it would be undesirable to standardize materials for the various grades*, on the basis that this places subject matter above the individual and makes the requirement of motor skills more important than the development of the intangible traits of good citizenship. This would be a very sound criticism of a program that did actually place subject matter or motor skills as the main objective, or as essentially important in and of themselves. The objective of this study, however, has been to work toward an evaluation and organization of subject matter so that it could be graded progressively to meet the changing needs of the individual at different age levels and to select activities that would meet these needs most effectively and most certainly.

It is true, of course, that *what* the child does is not as important as *how* he does it. The content or the "*what*" of the program must be interesting, stimulating and challenging, however, and be presented in such a manner as to increase the child's interest and develop his capacity. At the same time it must be presented to him at that stage where he will gain maximum value from it. This merely makes the subject matter a more effective tool for the development of good citizenship traits, and of course, always should be considered merely as a tool or medium.

The actual selection of activities for the minute detail of the curriculum or for a given school division program should be on the basis of their particular power to contribute in large measures to pupil development in terms of social behavior habits. In order to acquire desirable social behavior patterns, the child must have the opportunity for actual behavior experiences in specific situations. He should have the opportunity to *choose* forms of behavior in specific situations, modified, of course, by teacher-guidance.

The determination of socially desirable habits would be based, of course, upon an analysis of social needs, present and future. Each of the activities then, would have to be analyzed as to its power to contribute to the development of such desirable habits. This would require a very minute study carried on in great detail as a basis for determining the type of teaching situations to be used. It seems essential however in the meantime to carry on a definite analysis of the general adaptation of activities to grades or



school division; this adaptation to be based on past experience of outstanding leaders in the field.

6. A similar criticism has been made *that general aims and objectives are not satisfactory and must be replaced by specific objectives*. The argument is that abstract terms such as honesty, sportsmanship, health, are judged merely in terms of certain specific behaviors and that to develop such general traits would require the development of a large number of specific behavior patterns. These could best be developed by activities so arranged as to contribute to these behavior patterns. This would necessarily require a wide distribution of activities so that the learner would develop adaptability to varied related situations. It is further urged that specific activities cannot be evaluated as having certain general contributions to make in either greater or lesser degree than others.

These arguments are sound and indicate a line of procedure that our detailed curriculum research will need to follow later on. At the same time, however, it seems reasonably sound to assume that some activities have greater potential possibilities for providing suitable problem situations in which the child may develop or acquire reaction habits of desirable types. Activities are bound to vary in their potential contributions, some being richer in certain fields than in others. Hence it seems essential to provide at least a general philosophical evaluation of the possible contribution of the activity.

The detailed evaluation could be determined later. It can well be questioned whether we are yet ready for such minute study as that involved in this discussion. The first stage would seem to be a rough analysis and a reasonable distribution of the elements of the curriculum to prevent over-lapping and to insure a wide spread interest and exposure to activity, followed later by the more minute study. It must not be overlooked at the same time that in making a minute analysis of activity there is great danger of taking the spontaneity out of the play life of the child.

In the same connection it has been suggested that a desirable procedure would be to pick out particular social needs to be stressed at a given time of the year or in a given school grade as based on the determined objectives for the program; then to select those activities which would best help the teacher develop these desired specific behavior patterns on the part of the pupil. Here again there would seem to be grave danger of over-formalizing the program in terms of social behavior and taking away spontaneity. Each child should be exposed to a large variety of activity situations in which he may have a chance to choose and to act in varied ways. Some pupils will learn certain traits quickly in one situation, others will require a distinctly different set-up to develop the same traits.



## IV.

**Proposed Plan for Continuance of the Study**

The foregoing discussion of the curriculum study and the various problems being met should be sufficient evidence to prove that the task of building an acceptable curriculum in physical education is a stupendous one and that it will doubtless require many years of study and exploration to achieve significant results. More and more it looms up as the heart and core of the physical education problem. Only by a satisfactory solution of it can physical education hope to become established as an acceptable integrated part of education. The chairman accordingly wishes to urge very strongly that the society continue to take the lead in furthering the study and that it maintain definite committee work, giving every possible support to the promotion of further research. It is quite probable that it will be necessary to ask for further cooperation from the State Society of Directors of Physical Education and also to ask individual aid from many leading city directors of physical education over the country. The problem is a far reaching one and will require extensive cooperation on the part of every progressive leader in the field.

On the basis of the past study and the investigations of the present year, and in line with recommendations and suggestions submitted by Dr. McCloy and Dr. Oktavec, the other members of the research committee, the chairman wishes to propose the following general plan of procedure for the continuance of the study.

1. That the committee be enlarged to include two or three additional members who represent large collegiate institutions with strong graduate departments and who would be in a strategic position to encourage and direct individual research work in the field.

2. That if possible the committee be called together at some time during the year for an intensive study of several days in collaboration with outstanding selected individuals from other closely related fields, such as educational psychology, educational philosophy, educational sociology, etc. The object of this meeting would be to work out a thorough going analysis of the scope of the research and to outline methods of procedure in detail with all the conclusions carefully noted by expert secretarial help. This would serve to establish a sound scientific working basis for the further continuance of the study.

3. On the basis of the above outline, a number of outstanding graduate departments of physical education would be selected, each to take the responsibility for some one main division of the proposed outline of further research. Experienced and capable graduate students would be asked to co-operate by taking certain sub-topics under these main headings for thorough-going research and ex-

ploration, probably using the material as a basis for dissertations for the Master's or Doctor's degree. The findings of these various individuals would then be pooled in each institution on a committee basis, supervised by the advisory members of the Curriculum Research Committee, who would then edit and prepare that material to submit to the committee as a whole for criticism, revisions and possible inclusion in definite committee report.

Such a plan obviously would require very careful preliminary preparation and would require frequent consultation between members of the committee in order to insure a coordinated plan of procedure. It should be highly productive of excellent results, however, and should, within a period of two or three years at least, give something very definite and worth while in the way of a practical working curriculum adapted to actual educational needs.

In attempting to formulate a definite outline of the scope of the study on the elaborate basis outlined above, the chairman would suggest the following major divisions:

1. The determination of general aims and objectives of physical education based upon a sound philosophy of education.
  - a. This study would include a determination of specific needs in terms of the physical, social, mental and emotional life of the child, present and future.
  - b. This study should also include specific objectives for each age level based on interests and capacities, these objectives to be in terms of the general needs. (A check list of pupil interest might possibly help in determining these objectives.)
2. An evaluation of various activities at different age levels in terms of the fundamental objectives and adapted to meet the specific needs. (This part of the study has already been completed in a rough way in the curriculum research work up to date.)
3. The selection and adaptation of these activities in terms of their value to the various age levels based on natural interests and ripened skill mechanisms.
4. The determination of teaching content or the specific elements of each activity to be offered at different school division or grade levels.
5. The determination of time allotment or the actual amount of time to be devoted to a given activity within the program of the school division to which it has been assigned; namely, whether its value justifies giving it one-twentieth or one-tenth or one-fifth or one-third of the total amount of time given to all activities in physical education in the particular school division.
6. A thorough analysis of teaching techniques and characteristics of teaching situations suitable for the development of behavior

patterns in terms of the above determined aims and objectives of the program. Intensive experiment and exploration in various types of instruction procedures should offer rich results.

7. Formulation of standardized tests of motor skills, of knowledge and information, and of attitude, appropriately adapted to the subject content for the particular school division. Such achievement standards or tests including social traits as well as motor skills would serve as definite goals of achievement for grade levels. Some form of measuring stick is essential if we are to determine how effective the teaching has proved.

8. Establishing administrative standards to make possible the effective realization of such a curriculum in schools of all sizes and conditions. Such standards would have to be variable and adaptable to widely differing conditions. They should cover such elements as teaching staff, subject content, equipment and facilities, time allotment, teaching technique, health supervision, achievement standards, etc.

Such a proposed study on the scale indicated would, of course, be expensive of time and perhaps of money. If, however, it could be handled through the medium of graduate dissertations, much of the monetary expense could be eliminated or reduced. The time element could also be minimized since there would be many experts working in related fields. The chairman also feels that it might be worth while and justifiable to carry on some collateral studies of the questionnaire type similar to the work done up to date in the research to find out the consensus of opinion of leaders in the field relative to the various other items in the proposed study. If possible the committee will undertake to carry on such study in addition to the individual research.

Respectfully submitted,

C. H. McCLOY,

*State University of Iowa*

FRANK L. OKTAVEC,

*College of the City of Detroit*

WM. R. LAPORTE, (*Chairman*),

*University of Southern California*

# The New Indoor Athletic Building At Harvard University

By NORMAN W. FRADD  
*Harvard University*

IN preparing this paper I have tried to introduce factors in our equipment and problems we have to meet which were discussed by our Society in monographs on "Physical Education Buildings," published in 1923, and the more recent survey and report of our Committee on Construction and Material Equipment, published in the 1929 Proceedings of the Society.

In meeting the physical education requirements of any student body the ideal layout in equipment is one factor but, as you all know, there are other factors which may never allow you to reach that goal. However high these ideals, they can be taken in stride if our training and knowledge of the needs and use are such that we can go to our administrative heads and say: "These are the facts; these are our needs."

So it was at Harvard when in 1925 Mr. William J. Bingham, our Director of Athletics and Physical Education, hit the problem of inadequate indoor exercise facilities which had been existent for the past twenty years, with Hemenway Gymnasium as the only building then in use and housing practically all the activities carried on during the indoor months of the college year. I will not elaborate on the various smells which hit the nostrils of anyone coming within the walls of that building which was erected and dedicated to physical education just a short fifty-two years ago, and was considered the model and marvel of the times. Times change; building styles are different; even certain obnoxious odors must be eliminated if we are to progress.

Our new plant, completed in 1930 and having just finished its first year of usage, stands as a very utilitarian monument to two anonymous donors under the *nommes de plumes* of Alumnus Aquaticus No. 1 and No. 2 who, with gifts totaling \$750,000, started the dirt flying to provide adequate facilities for most of our indoor activities. The Harvard Athletic Association emptied its pocket with a transfer of funds to the extent of \$450,000, and so we were under way with the breaking of ground February, 1929. The dedication of our swimming pool took place in April, 1930. At this time the upper floors were still under construction, but completion of these two floors came during the summer, and full

use of the plant was in operation starting with the college year of 1930.

I used the phrase above "most of our indoor activities." Our plan at Harvard does not lend itself to a unit type of building which would care for all indoor activities. From an administrative point of view we had the problem of location to face—whether it would be more desirable to build in the geographic center of the University, or on Soldiers Field across the river and adjoining our playing field. We selected the geographic center.

The type of architecture and height of building were governed by surroundings, size of lot, and needs of the various sports and physical education activities to be housed.

OUR main floor, our recreation hall, is located on the top or fourth floor of our building. Here we have a clear, unobstructed surface of maple flooring of 145 x 115 feet, well lighted both by natural or artificial illumination. This space carries three basket ball courts and three tennis courts. All the gymnasium apparatus is either keyed into the floor or hung so that it can be hoisted when not in use, or rolled into storage. The walls of this gymnasium are of glazed terra cotta of a cream, chocolate and buff mixture. A sliding canvas and net curtain thirty feet high divides courts No. 1 and No. 2. There is forty feet of head room from floor to truss work which makes for a light, airy work-room with forced ventilation which will care for twenty thousand cubic feet of air exchange per minute.

Steel knock-down bleachers made by Wayne will carry a capacity of 1,800 spectators, built so that they can be erected in units which will serve 600, 900 or the full load. These are banked on each side of our central exhibition court and with the small visitors' galleries serve to care for a capacity house of about 2,500. Storage is provided adjoining the main floor, and these stands plus all the gymnasium apparatus, etc., pack into a remarkably small space.

An instructor's office with individual lockers, lavatories and shower equipment, two other offices used at present for basketball, and a third room with sinks and several electric outlets where a caterer could hold forth as a serving room, complete the top floor. Drinking fountains and flush cuspidors are installed throughout the building in all our exercise rooms. Our floor finish has been unsatisfactory to date in that it marred and cracked with usage. We were advised to use a patented floor filler which came very highly recommended. To date we are struggling along expecting to come back to the old tried and true boiled oil and turpentine.

OUR third floor serves a two-fold purpose. We have exercise rooms which house wrestling, fencing, boxing, and special exercises and which are grouped around shower batteries and 1500 steel lockers. Every room on this floor is well lighted, the single exception being the boxing room, which needs artificial light. We have a complete unit for faculty use with separate showers and baths. A supply room, squad room (for visiting teams), first aid, physical therapy and steam room make up the other units on this level. We have tried to eliminate the assignment of rooms or quarters which would waste space by being in use only part time. For instance, the visiting team room is used for individual corrective work, and the faculty locker room is converted into a squad room on occasion. Boxing, fencing, wrestling, etc., do not rate squad rooms, but various blocks of lockers are assigned to these sports, and boys electing this or that form of exercise are given lockers in the section set apart. Our locker installation was taken care of by Lyons with a full length 7" wide by 18" deep type of locker which provides a small box with separate opening above the larger locker. Combination locks are in use throughout our entire locker system. These lockers are rented to the students for the college year, a charge of three dollars being applied to one's term bill.

Harvard has a one-year physical education requirement which applies to freshmen only. While most of our classes meet in the afternoon, there are certain classes conducted in the morning which help care for conflicts with studies. Our peak load in organized and unorganized work falls on the building between three and six each afternoon with an average daily attendance for five days each week of 800 men. In a survey of use conducted the second week in December for three days, our building was used by 902 boys on Monday, 672 on Tuesday, and 885 on Wednesday. Our locker room facilities are so arranged that the load is handled very adequately without any sign of crowding to date. An ozonator linked up with our ventilating system eliminates the "old locker room smell."

There are several interesting points which might well be given attention on this floor. In the various exercise rooms, for instance, the wrestling room, 57' x 34', has padding on all walls and over the entire floor two inches thick. The wall padding consists of mats hung by straps. The mats are removable and easily cleaned instead of the usual built-on-the-wall type. The mats on the floor are in sizes built for easy handling. They cover the entire surface. These in turn are covered by a rubber mat, most satisfactory in that it is easily kept clean with soap and hot water. Goodrich Company of Akron, Ohio, made up this rubber mat for us.

Adjoining the wrestling room and separated by a folding



partition is the fencing room. The flooring of the fencing lanes is in different color than the remaining space. The material used for flooring is cork matting. Wall racks of special design, padded targets, and mirrors for observing form while practicing the lunge complete the layout.

The boxing room, although requiring artificial light, is well ventilated. The floor is covered with a one-inch felt mat, canvas covered, and the wall surfaces have a bumper pad about two feet in width suspended at shoulder height. A take-down ring is hung from eyebolts in the wall at one end of the room. Locked steel cabinets house the boxing gloves on drying racks when the room is not in use. Under the label of "free room" is another small exercise room where an individual can work out with chest weights, stall bars, punching bags, heavy weights or medicine balls. This room opens into the boxing room and makes a very handy accompaniment to it.

The special exercise room is equipped with many mirrors for self-correction, stall bars and individual mats. Beams, over-head ladders and chest weights make a composite room for use of small classes averaging thirty men.

Terraza was used in all our bath and toilet rooms. Individual showers with mixing valves of the Speakman type are giving entire satisfaction. Liquid soap is delivered through valve outlets placed at convenient intervals about the shower rooms. We use the stock type of shower cubicle in the faculty baths, but the open room grouping prevails in all other units. Unlimited hot water is supplied from storage tanks in the sub-basement.

THE next floor, the mezzanine level, has interesting features. The swimming pool is provided with permanent seating facilities for 1,500 people and natural or artificial light, giving illumination without skylights which is even and beautiful whether day or night. Walls and ceiling are of acoustic plaster, cutting down about 40% on sound-wave vibrations.

Two pools are separated by the take-off bulkhead done in tile. The pools and floors surrounding are of white tile with red borders, the walls of green shadings up to a six-foot height.

The control or Swimming Director's offices are at the far end near the practice or beginners' pool, which is 40 x 20 feet and grades in depth from 4 to 5 feet. Directly below us is the main pool, 75 x 40 and a 7' 6" to 10' depth with grade in the long dimension. The high spring-board is cantilevered from the ceiling, clearing the pool edge and floor. Recessed ladders are provided, and a scum gutter succeeds in caring for the splash and leveling off of the pool surface rapidly while being used.

THE various coaches were asked what they would like to change in their particular set-up from their year's experience in usage of our present facilities. Our Superintendent of Building was also asked where he thought improvements might be made in the care or upkeep of the plant, and the following recommendations are suggested:

*Top or Gymnasium Floor.*

1. Iron kick plate.
2. Score board incorporated in building plans.
3. Drinking fountains should not jut beyond wall facing.
4. Another elevator (freight).
5. More storage.
6. Movable window sash—setting of broken glass and cleaning almost impossible.
7. The erection of our portable steel stands throws out our floor schedule and disrupts our program. The answer to this problem is probably permanent seating equipment and a varsity basketball court.

*Third Floor.*

1. Recessed radiation.
2. Overhead showers.
3. Cut down 50% on our toilet arrangements. Vacuum cleaning system.

*Second Floor.*

This is the mezzanine level of the swimming pool room. No changes.

*First Floor.*

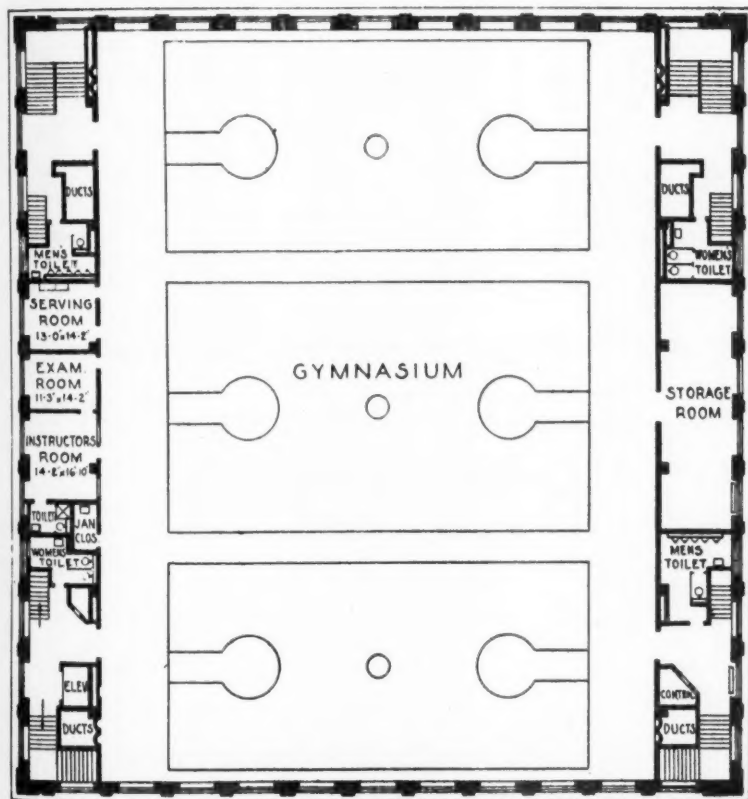
1. More storage space.
2. Doctor's office, first aid, massage and steam room should be linked up in one unit instead of being arranged as they are at present on the first and third floors.
3. Installation of flash or buzzer call signal.
4. Lounge or trophy room.
5. Control desk in the main lobby.
6. Four staircases offer an administrative problem which is very difficult to control.

*Swimming Pool Level and Locker Room.*

1. Radiation recessed in locker room.
2. Overhead showers.
3. Reduce 50% toilet facilities.
4. Recessed electric lights 40 feet above pool level make it difficult to replace burnt out bulbs.

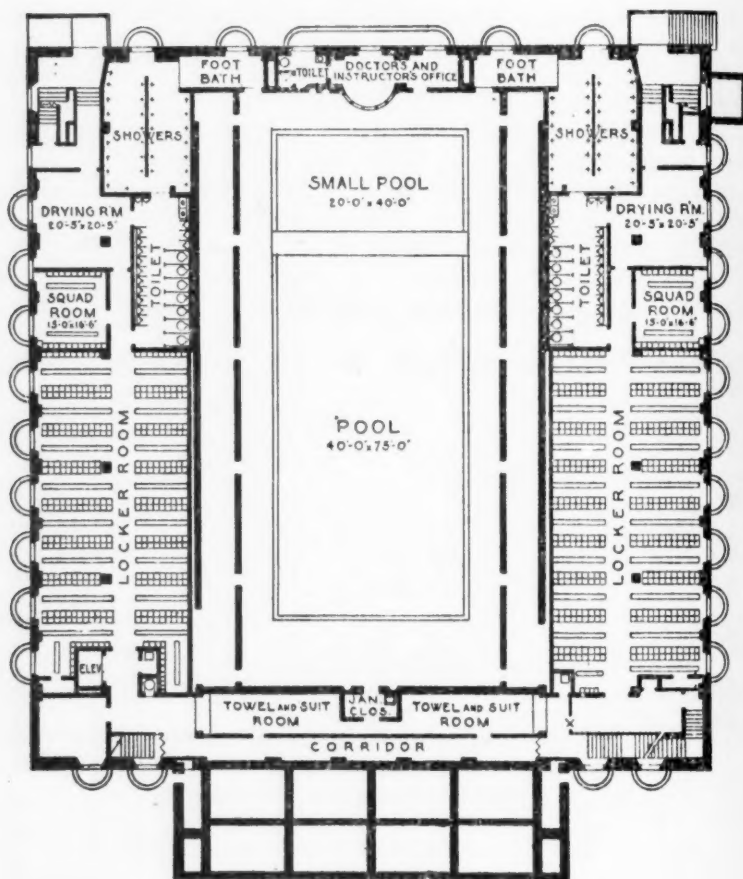
5. Re-locate under-water connections for vacuum cleaning apparatus in pool.
6. Recessed diving pool.
7. Non-skid terraza.
8. The four-inch lane marking at present should be 12" tapering in the perpendicular marking at the end of the pool.
9. No hand-rail construction above pool level at ladders.
10. Low spring-board nearer center at pool end.
11. Instructor's office on a different level than pool floor to eliminate blind spots.
12. Glazed tile at the water level in the pool to help in cleaning above water line.
13. Eliminate hand railings of brass. Substitute iron or chromium plated rail which could be kept clean more easily.
14. Incorporation of a permanent score board.

## HARVARD INDOOR ATHLETIC BUILDING



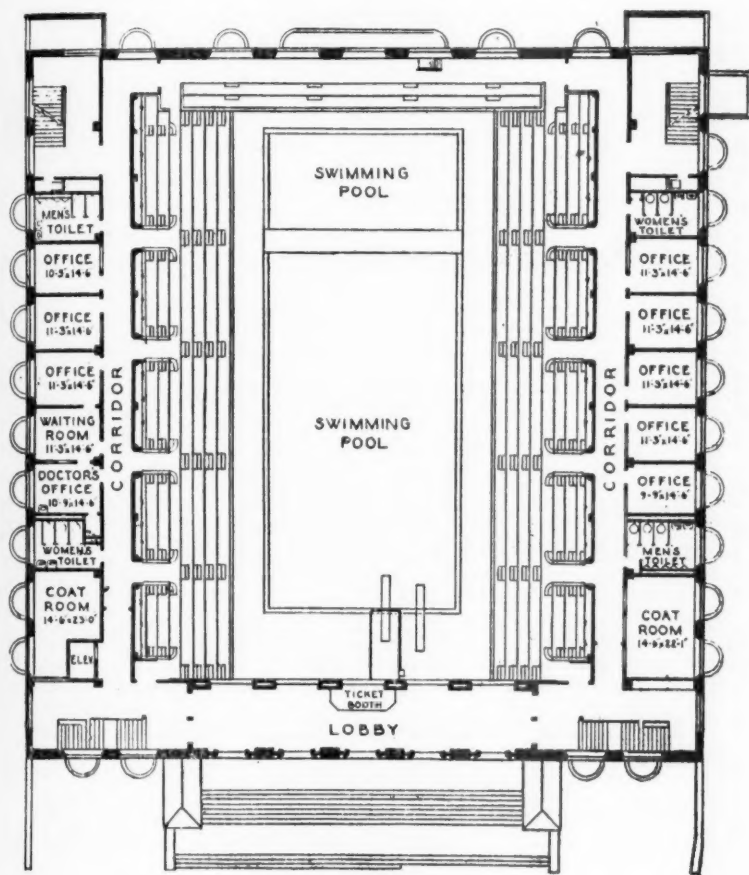
GYMNASIUM FLOOR PLAN

## HARVARD INDOOR ATHLETIC BUILDING



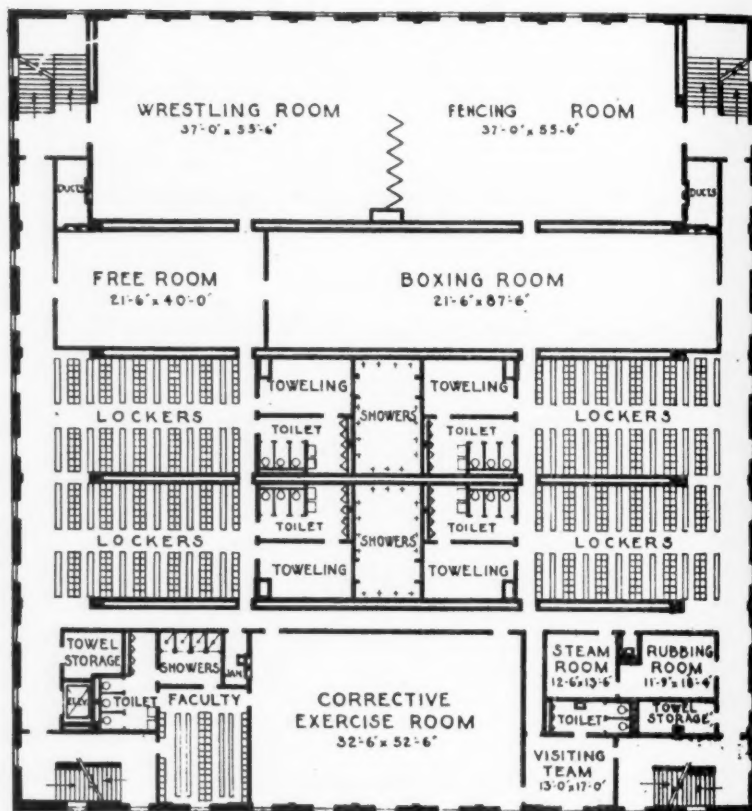
BASEMENT FLOOR PLAN

## HARVARD INDOOR ATHLETIC BUILDING



FIRST FLOOR PLAN

## HARVARD INDOOR ATHLETIC BUILDING



GYM LOCKER FLOOR PLAN



# Physical Efficiency As Measured at the University of California

By FRANK KLEEGERGER  
*University of California, Berkeley, California*

PHYSICAL education has possibly enjoyed or, perhaps better, suffered more different definitions, interpretations, and modes of presentation than any other branch of the educational field. Many theories, scientific and otherwise, have been set forth for its various developments and systems.

The processes of evolution have provided man with a body capable of the vigorous activity necessary for survival under the conditions of a physical environment demanding severe muscular exertion. Man's present artificial environment, placing a premium upon mental rather than physical cleverness and lacking the drive of necessity for the cultivation of physical skills, tends to mislead him into undue neglect and even abuse of his physical powers. The fundamental mechanisms of the body, however, have changed but little. It still demands the stimulus of vigorous activity not only for maintenance of physical efficiency, but also for the realization of the individual's maximum potentialities for happiness, for intellectual effort, for keenness of perception, and for self-discipline.

Under present conditions of sedentary life too few experience that enthusiasm and zest in the mere process of living, which can come only to the vigorous, physically active individual. Sluggish metabolism, excess weight, mental fatigue, raw nerves, and premature old age constitute the price of inactivity too often paid by modern civilized man.

Lack of vigorous physical activity together with the resultant softening of the body may contribute to a weakening of moral fiber, blunting of the senses, and a reduction of capacity for mental effort and physical enjoyment. Not only does physical inactivity tend to make men and women less attractive and enduring physically, but it also is apt to render them less manly and womanly in body, spirit and conduct.

The general purpose of physical education might therefore be simply stated as the promotion of wholesome happiness through the engendering of a love for physical exertion. This is best accomplished through the development of those physical skills and habits of participation which will insure to the sports devotee interests and abilities

which will prompt him, in his search for adventure and happiness, to carry on wholesome physical activity throughout life. Physical education properly conceived and administered should build vigorous, active, happy, attractive physical beings inspired by an enthusiasm for those things that may be classed as truly "sporting" in all relationships of life. Thus women may become more womanly through increased beauty and grace of body and spirit, and men may become more manly through zest in exertion, through the sense of physical power, and through appreciation of the joy to be found in generosity in action.

On this general premise, physical education in broad terms might be simply defined as an educational process not only developing physical potentialities, but influencing the entire individual through employment of the physical equipment—education not only of, but through the physical mechanism.

The tools of physical education are seen to be essentially physical activities. Physical education's fundamental approach to its various objectives must frankly be the sound *teaching* and *supervising* of *physical* skills and their *proper application* in *individual* and *group competition*.

The intelligent promotion of physical power and skill as a primary and fundamental objective of physical education need in no way presuppose neglect of any of the other aims frequently cited. In fact these objectives are actually best promoted when considered as secondary and incidental factors in the process of physical education. Over emphasis on any or all of the incidental contributions of physical education is apt to confuse and cloud the main approach. Such objectives as health; posture; discipline; mental, moral, and social development are shared with other departments of the educational organization and are frequently better promoted as *primary* responsibilities by other departments than the one entrusted with the business of physical education.

The problem thus of developing a plan to bring about the physical education of university men resolves itself into the business of setting up procedures calculated to result in the acquirement of physical powers and skills and so of the various incidental values indicated.

The Department of Physical Education for Men at the University of California undertook the problem of reorganizing its work along these lines in the year 1915. The purpose of this paper is to indicate the philosophical considerations prompting its efforts and also the methods employed during some fifteen years of experimentation for the development of an approach through which a fair estimate might be made as to the degree to which students could be considered physically educated on entering the University and through which it

would be possible to guide them in acquiring the skills essential to their future happiness and effectiveness.

The men entering a university represent potentialities for development along many lines, and it is clearly the business of a university to help realize all these potentialities, whether intellectual, physical, spiritual, or social in nature. A university's generally accepted purpose is recognized as being the promotion of the intellectual development of its students. It is not reasonable, however, to overlook the necessity of providing vigorous, capable physical equipment and the importance of encouraging sound habits and satisfactions in this pursuit of intellectual objectives.

Universities through long experience in the business of intellectual training have developed a technique for classification and curriculum assignment for students entering college. The placing of an individual in a sport, however, or a special type of physical training, presents a somewhat different problem from that involved in assigning him in his courses of study. No uniformity obtains as to the degree of physical education possessed by students as a product of high school training, and it is evident that the university cannot demand credentials in physical power, skill, and "sporting spirit" as it does in subjects involving purely intellectual preparation.

This fact called for an attempt at the evaluation of an individual's physical cleverness or physical intelligence, in brief, for the determination, if possible, of the degree to which the student might be considered physically educated on entering the University. It was not only necessary to determine his standing as to health and as to the possession of a capable physical mechanism for purposes of guidance in placing him in physical training classes, but it was even more important *through the method pursued*, to arouse his own interest in his physical possibilities and in the desirability of developing such habits of constructive recreation as might help to insure his future vigor, zest, and joy in life. A number of physical tests were therefore evolved which have brought about a sampling of the field of sports and proved incentives to interest men in their physical potentialities while forming a basis for a logical classification of these men and for their purposeful assignment to one or more of the some twenty activities.

The procedure to be followed in promoting the physical education of the University of California men was conceived on the assumption that a man may not be considered physically educated *merely* because he possesses a *sound* and *healthy* body. Fundamentally, he must be possessed of two things: a body skilled in natural and usable activities, and a soul filled with that spirit of play, joy, and

chivalry which comes only through fierce but generous physical competition. In this concept of physical education it is clear that the spirit essential to the real sportsman is recognized as demanding fundamental consideration through *systematic, though incidental* cultivation in the conduct of *all* sports. Traits of the spirit, though important by-products of comprehensive physical education, naturally do not lend themselves to accurate measurement. It was seen to be necessary, therefore, to strive for the actual measurement of progress in this field through centering measurement on the testing of physical power and cleverness, while at the same time selecting such tests as might be expected to appeal to the imagination and whet the appetites of college men for vigorous physical recreation. It was believed that even the unadventurous, physically inactive individual might be thrown into an emergency demanding a certain degree of physical skill, while the adventurous, active man or sportsman would surely need certain fundamental skills if he were to survive, enjoy, and prove successful in the physical pursuits of his choice.

It, therefore, appeared logical to conceive of a man as educated from the standpoint of his physical mechanism when he should prove capable of demonstrating the possession of a fairly *powerful* and serviceable body guided by a sporting attitude of mind. College men with rare exception are anxious to become strong and skillful. The appeal was therefore made with such facts in mind, and the physical tests established were evolved on the *assumption that a man to possess an educated body, must be physically efficient! That is, he must be prepared to cope successfully with the physical emergencies which might readily befall a vigorous, adventurous, sport-loving man.*

Analyzing the numerous physical problems which were likely to present themselves to the active, vigorous man, three types of physical prowess were set up as essential. First, it was conceived that a man must be prepared to move quickly, accurately, and effectively in case of accident and that he must also possess the same qualities if he were to find pleasure through participation in sports. To test a man's ability in muscular coördination of this practical sort an agility test was established utilizing five events: running, jumping, fence-vaulting, climbing, and falling.

In the second place, it was thought logical, as well as *appealing to the youthful imagination*, that a man should be prepared to maintain himself against physical aggression, and be possessed of ability and the self-confidence to warrant assurance in taking aggressive action if a situation should arise demanding such procedure. A knowledge of some form of self-defense gained under *proper guidance*, it was clear, would develop a valuable type of self-control as well as a confidence which could be counted upon to afford weaker dependents, as well as the man himself, assurance and protection. Defense tests

were therefore arranged, making possible the evaluation of the student's skill as a boxer or wrestler. At the same time it was arranged that systematic emphasis should be placed upon the development of poise, determination, self-control, and generosity as fundamental in the making of a successful fighter as well as in the training of the gentleman and sportsman.

In the third place, it was evident that all men, not to mention adventurous souls, lovers of outdoor life, men worthy of being classed as sportsmen, should be capable of meeting an emergency demanding skill in swimming and a knowledge of the art of rescuing individuals in danger of drowning. The water hazard is recognized as a real one even to many people in every day life, and a man could hardly be expected to risk the possibility of having to stand passively by while death through drowning threatened a fellow being. Since all men should be prepared to meet this emergency, the Department introduced a swimming test to determine a man's ability in swimming, diving, and in the technique of rescue and resuscitation of a person in danger of drowning. In passing, it is interesting to note that the University of California's instruction in life saving during the last eight years has brought about the Red Cross certification of more than 1400 men.

Few men have proved capable of passing all phases of the physical efficiency tests on entering the University. Many of the leading athletes in the various sports have failed, or made a very poor showing in self-defense or swimming or both. Most men, however, who later have proved clever as athletes have passed the agility test with comparative ease. To meet the conditions of this test a man must be able to run at least a hundred yards in  $13 \frac{1}{5}$  seconds, to broad jump 14 feet, to hand vault over a fence shoulder high, to climb a 12 foot rope, hand over hand, grasp the top of the 12 foot fence from which it hangs and drag himself to a platform on the opposite side in a minimum of 25 seconds, and finally be able to lunge headlong over an obstacle 3 feet high, land on hands or shoulders and roll to the feet with fair skill.

Men are classified in the agility, defense, and swimming tests through the same plan of grading used in Latin, Greek, or mathematics. Four passing classifications are provided: A, excellent; B, good; C, fair; D, barely passing; etc. (See History Card).

The man who fails to pass any phase of the efficiency test is assigned to a form of physical training calculated to correct his particular deficiencies and round out the education of his physical mechanism. Thus, the man who is weak in defense enters upon a course of training in boxing or wrestling, the feeble swimmer signs up at the pool, and the boy demonstrating poor agility in running or jumping receives special instruction in running or jumping through assign-

ment to track. Those whose defects of agility are evident in climbing, vaulting, and tumbling receive special training for the middle and upper body in the gymnasium. As soon as a man shows sufficient ability to pass all tests, he proceeds from the novice to the athletic division and thenceforth selects the sports which *especially interest* him. He thus completes his required work in physical education while developing his athletic hobbies for the future, being given every encouragement especially in "carry-over" sports.

It is clear from the preceding historical review and the statements of aims that the tests established at California were *not evolved fundamentally for the purpose of scientific evaluation and statistical research. They were selected first on the basis of their practical significance and their appeal to the youthful imagination*, and second, in the effort to acquaint men not merely with their individual deficiencies in physical strength and ability but especially with their inabilities as far as *certain practical skills* are concerned, skills which might prove important as factors in a man's happiness and successes and so be classed as essential in the development of his *physical intelligence*.

This at least may be said for the California plan. It has worked in the Department of Physical Education for Men at the University of California since 1915. It has undergone certain modifications of course, but has provided a basis for the distribution of some 15,000 men in activities capable of developing and broadening the scope of their physical abilities. The tests have provided these men with the definite goal of a fairly comprehensive physical efficiency, at the same time that the work presented has enabled them to meet at least the minimum requirements of an active vigorous sport loving existence. In addition, prompted by experience gained in these tests most of the men have gone well beyond these minimum requirements and many have been led into *new fields* of sport. The great majority have developed the habit of seeking physical recreation; a goodly number have been fired with special enthusiasm as they found their powers increasing and their skill as performers recognized through the highest honor college athletics has to offer, namely, the award of a place on a Varsity team.

The majority of the tests are of a subjective rather than objective type and so open to variations based upon the degree of accuracy and consistency evidenced by the examiners' *judgment*. The Department was not satisfied, however, with purely empirical standards where the tests offered possibilities for scientific evaluation, first, because they were empirical and second, it seemed possible some interesting relationships might be discovered through a scientific study of the subject. Finally, the time arrived when it seemed that sufficient data



had been collected to warrant a statistical analysis of the findings in the objective tests which might justly claim a scientific basis in the establishment of performance standards in these events.

A preliminary consideration of the factors presented resulted in the establishment of four primary questions to be contemplated in the study; namely,

- I. What was to be expected of University of California freshmen with respect to certain physical traits and abilities?
- II. What, if any, sound indices of physical efficiency might be established on the basis of a grouping of the data collected through the tests employed?
- III. What correlations might be discovered with regard to these traits and abilities?
- IV. What readjustments as to performance, classifications, and gradings might be accomplished through a sound statistical analysis of the material collected?

The present paper deals with problems I and IV; problems II and III have been ably dealt with as far as track and a number of other events are concerned by Drs. Bovard and Cozens in *Tests and Measurements in Physical Education*.

The measurements and tests used throughout the years preceding this study presented records of the following traits and abilities:

#### Physical Data and Measurements

*Age.* In determining the subject's age each one was asked to state his age to the nearest six months.

*Height.* The man's height was determined by the use of the stadiometer to the nearest half inch.

*Sitting Height.* In determining the sitting height the subject was instructed to sit well back on a stadiometer and the height was measured from the surface of the seat to the top of the head. Each man was measured to the nearest half-inch. In deriving the results, however, one inch was taken as the unit for computation.

*Weight.* The subject's weight was determined through the use of standard laboratory scales. Each man was weighed to the nearest pound.

*Vital Capacity.* In determining lung capacity of the subject a standard spirometer was used. The class interval taken was five cubic inches.

#### Agility

##### *100-yard Dash and Broad Jump:*

The 100-yard dash and the broad jump events are conducted as in ordinary track competition, save for the fact that all participants are required to wear tennis shoes to insure comparable results and the

broad jump is measured from the toe of the jumping foot to the nearest heel mark.

*The Hand Vault:*

The hand vault requires that the candidate vault over an obstacle using one or both hands, no part of the body being allowed to touch the obstacle or pass a vertical plane beneath and parallel to it.

*Scaling:*

The scaling test requires that the man climb an inch and a half rope to the top of a twelve-foot wall, starting from a hanging position with feet free of the ground, scale the wall and finish by touching the shelf on the opposite side with both feet. The legs and feet must not be used to assist the man in climbing the rope but the toes may be placed against the wall to steady the body and the legs may be used in drawing the body over the top of the wall.

*Falling:*

In the falling test the man must run and dive forward, passing head first over an obstacle 36 inches high and alighting on the hands and shoulders in a manner insuring safety to the performer. The takeoff must be placed at least three feet in front of the obstacle. Preliminary tests and instruction must be given to discover and prepare individuals not capable of undertaking the event with safety.

### Swimming

All dives, strokes and rescues must be executed in good form. No credit is given for indifferent form. The dives, strokes, and rescues must be demonstrated in the order listed.

*Diving:*

$\frac{1}{3}$  Any take-off from the side.

$\frac{2}{3}$  Jumping in feet first.

1. Standing dive head first, or feet first from high board.
2. Preceding plus running straight dive (at least 3 steps).
3. Swan dive.
4. Front jack knife dive.
5. Back dive.
6. Elective dive.
7. Elective dive
8. Elective dive.

*Strokes:*

$\frac{1}{2}$  Ability to float at least 30 seconds.

1. One elective stroke.
2. Side stroke.
3. Second elective stroke.
4. Elementary back.

5. American crawl.
6. Third elective stroke.
7. Breast stroke.
8. Racing back stroke.
9. Fourth elective stroke.

*Distance:*

The contestants are given six minutes to swim, and the distance completed in that length of time is the basis on which their grade is established.

*Speed:*

Twenty-five yards is the required distance for the speed test. The time absorbed in covering this distance determines the grade.

*Rescue:*

It is required that the candidate bring a helpless companion to shore over the distances mentioned for the various grades on the History Card.

### Defense

*Boxing, Wrestling, and Fencing:*

Grading is based upon the willingness displayed by the candidate no matter what the test may be, to play the game in a considerate spirit of give and take, and upon the knowledge and skill which he demonstrates (1) in boxing with reference to position, balance and proper use of each hand in hitting or blocking, or (2) in wrestling with reference to weight control and skill in executing holds and counters, or (3) in fencing with reference to skill in thrusting and striking as with a cane for purposes of defense.

The complete physical efficiency test is therefore seen to include in addition to the *objectively measurable* tests, tests of ability in various forms of defense, in falling, in diving, and in the technique of swimming and of rescuing a drowning person. These tests being subjectively measured indicate merely the judgment of experts. Such tests, however, are fully as important, if not *more important than the objectively measurable* tests, in making the efficiency test plan a *broad, practical and appealing* test of *physical efficiency* rather than a mere test of such *motor abilities* as may lend themselves to accurate measurement.

### Statistical Method

In recalibrating the physical efficiency tests, the attempt was to stabilize the tests in several ways from the statistical point of view. The tests which were finally used for establishing the new standards were those dealing with accurately measurable objective data. The performance data of five hundred freshmen (as seen in the following

table), represented an entirely adequate series of records for reliable computation and were finally used as a basis for the restandardization. From this data the means, with probable errors, and the standard deviations, with probable errors, for the various tests, were computed, and means representing the average ability of freshmen in the tests and the standard deviations the measure of the variability within the group.

The means and standard deviations for the tests are presented in Table I. The formulas used in deriving these values are those customarily used: namely, the Pierson formulas for means and sigmas, thus:

$$\text{Mean, (or average) } M_x = \frac{\sum x}{n}$$

$$\text{Sigma, (or standard deviation) } C_x = \sqrt{\frac{\sum x^2}{n} - M_x^2}$$

$$\text{The probable error of the mean is equal to P. E.} = .6745 X \frac{6}{\sqrt{n}}$$

$$\text{The probable error of the sigma is equal to P. E.} = .6745 X \frac{6}{\sqrt{2n}}$$

TABLE I.

Event	MEAN OR AVERAGE					
	First Group N 100	Second Group N 100	Third Group N 100	Fourth Group N 100	Fifth Group N 100	All 500 N 500
Run	12.53	12.41	12.48	12.59	12.52	12.61
Jump	187.46	190.90	190.20	188.32	187.00	188.78
Vault	56.18	56.77	56.03	55.86	56.17	56.20
Scale	12.08	11.94	12.12	12.88	13.10	12.42
Height—Standing	68.64	68.63	68.54	69.02	68.78	68.72
Height—Sitting	35.63	35.72	35.80	35.88	35.86	35.78
Weight	138.42	140.57	139.41	140.50	140.55	139.89
Lung Capacity	262.45	263.89	254.26	267.02	259.18	261.36
Event	SIGMAS OR STANDARD DEVIATIONS					
	First Group N 100	Second Group N 100	Third Group N 100	Fourth Group N 100	Fifth Group N 100	All 500 N 500
Run	.49	.46	.49	.49	.60	.51
Jump	13.48	15.18	14.92	12.58	15.11	14.38
Vault	4.55	4.83	5.64	4.51	4.62	4.86
Scale	6.78	6.35	7.39	8.13	9.37	7.70
Height—Standing	2.45	2.68	2.39	2.27	2.63	2.50
Height—Sitting	1.42	1.42	1.32	1.18	1.22	1.32
Weight	17.00	16.36	14.99	14.24	15.78	15.73
Lung Capacity	32.79	35.86	40.47	33.67	37.15	36.35

From these two measures it is possible to compute the standard score of any individual for a given test and place him exactly in relation to the group. That is, by subtracting his score from the mean value of the test and dividing it by the standard deviation for that test, his position in relation to the group of 500 becomes known in

terms of standard deviation. This same result is obtained more easily by one not versed in statistical procedure through merely noting the efficiency points made in each test and comparing these, one with the other or with the average in a given event as shown on the card. These efficiency points are based on sigma values just as the graphic representation of the card is based on sigma value. Since it is seen that the group of 500 represents a satisfactory sampling upon which to base statistical conclusions, it is evident that the subject will be able to view himself statistically in any of the objective tests presented in relation to all first year men entering the University of California.

The card finally developed for recording the findings of statistically recalibrated tests was evolved largely through the efforts of Dr. F. H. Frost and Dr. M. W. Debenham, statisticians collaborating with the author in carrying out the statistical study of the tests.

This scoring card presents a plan for rapid recording through the mere checking of a point on the scale for a given event, the check mark indicating the actual performance of the individual in that event. It also places the performer statistically on the basis of a percentile distribution, indicates graphically his statistical position in relation to his fellows through the superimposed curve of normal distribution, and at the same time assigns him automatically to a grade of A, B, C, D, or E, on the basis of the particular sigma interval in which his performance places him.

The central line of the scoring card is seen to pass vertically from the letter C through the mean of each event, thus the average running ability in the 100 yard dash as computed from the 500 freshmen is seen to be  $12\frac{3}{5}$  seconds, the jumping ability, 182" or 15'2". Since, as previously stated, the scale for each event is arranged so that the distance represented by the first vertical line on either side of the mean lies  $\frac{1}{2}$  of a standard deviation from the mean, it is possible to read directly the standard deviation of any event. The divisions centered by the letters, A, B, C, D, and E, each represents one standard deviation on the scale.

This *rapid, exact, statistical, graphic method of recording* thus offers a basis for grading founded upon the actual performance ability of California freshmen in each of the tests presented, automatically grading each man on the basis of ability, rather than upon the basis of a supposed ability which it is thought a freshman should possess.

The automatic assignment of grades based upon the standards derived in this study is fundamentally empirical, though not without authority when one considers its possibilities for consistency in grading the different events and its evident advantages for further statistical treatment of these grades.

Reference to the scoring card shows that a grade of C is given to all whose scores fall within  $\frac{1}{2}$  sigma on either side of the mean;

## UNIVERSITY OF CALIFORNIA—DEPARTMENT OF PHYSICAL EDUCATION FOR MEN

## INTERPRETATION OF CHART

The object of the Physical Efficiency test is to give each man an estimate of his relative physical efficiency. By means of the chart on the opposite side of this card a man may compare his ability in any event with his ability in any other event. For example B plus represents an equal degree of difficulty in all events; thus 12 flat in the dash equals 194 inches in the jump, or 6 4/5, in the scale, or 15 flat in the swi, etc.

A man may compare his ability with that of the thousands who have taken the test, and upon the statistical analysis of whose performance the chart is based. By adding the percentages to the right of the score recorded one may learn how many men out of every 100 do better than himself in that particular event.

In addition to passing each test with a grade of D, or better, a man is required to make a total of 15 points in each division of the Efficiency Test: Agility, Defense and Swimming. Two points are given for E plus, 4 for D plus, 6 for C plus, etc., therefore it behooves the individual to do his best in each event.

**AGILITY**—The 100-yard dash and the broad jump events are conducted as in ordinary track competition, save for the fact that all participants are required to wear tennis shoes to insure comparable results and that the broad jump is measured from the toe of the jumping foot to the nearest heel mark. The hand vault requires that the candidate vault over an obstacle, using one or both hands, no part of the body being allowed to touch the obstacle or pass a vertical plane beneath and parallel to it.

The scaling test requires that the man climb an inch and a half rope to the top of a twelve-foot wall, starting from a hanging position with feet above his head. The scaling test is performed by the man in drawing the rope but the legs may be placed against the wall to steady the body over the top of the wall.

In the falling test the man must run and dive forward, passing head first over an obstacle and alighting on the hands and shoulders in a manner ensuring safety to the performer. The take-off must be placed at least three feet in front of the obstacle. **Preliminary tests and instruction must be given to discover and prepare individuals not capable of undertaking the event with safety.**

**SWIMMING**—Scoring on the chart is based upon the following empirical standards. All dives, strokes and rescues must be executed in good form. No credit will be given for indifferent form. The dives, strokes and rescues must be demonstrated in the order listed.

Diving: 1/3 Any take off from the side.  
3 Swan dive.

**DIVING.** 1/3 Any take on from the slot.  
 2/3 Jumping in feet first  
 3 Swan dive.  
 4 Front Jack knife dive.

2/3 Jumping in feet first  
1 Standing dive head first, or feet first from high board.  
4 Front jack knife dive.  
5 Back dive.

2 Preceding plus running straight dive (at least three steps).

**Strokes:**  $\frac{1}{2}$  Ability to float at least 30 seconds

1 One elective stroke

4 Elementary back

7 Breast stroke

1 One effective stroke  
2 Side stroke  
3 American crawl  
4 Elementary back  
5 American crawl  
6 Breast stroke  
7 Breast stroke  
8 Racing back stroke

2 Blue stroke  
3 Second elective stroke  
6 Third elective stroke  
9 American claw  
8 Racing back stroke  
9 Fourth elective stroke

**Rescue:** It is required that the candidate bring a helpless companion to shore over the distances mentioned for the various grades. For

grade A subject must properly demonstrate the Cross-chest Carry and two elective holds.

**PENSE-Grading** is based upon the willingness displayed by the candidate, no matter what the test may be, to play the game in a consider-

**SENSE**=Grading is based upon the willingness displayed by the candidate, no matter what the test may be, to play the game in a considerate way. It is also based upon the knowledge and skill which he demonstrates (1) in boxing with reference to position balance and proper use of give and take, and upon the knowledge and skill which he demonstrates (1) in boxing with reference to position balance and proper use of give and take.

hand in hitting or blocking, or (2) in wrestling with reference to weight control and skill in executing holds and counters, or (3) in fencing or give and take, and upon the knowledge and skill which he demonstrates (1) in boxing with reference to position, balance and proper use

reference to skill in thrusting and striking as with a cane for purposes of defense.

reference to skill in thrusting and striking as with a cane for purposes of defense.

UNIVERSITY CREDIT IN PHYSICAL EDUCATION

UNIVERSITY CREDIT IN PHYSICAL EDUCATION

Grade	Grade
-------	-------

[illegible]

100

[illegible]

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	

[illegible]

Medical Report:	Remarks:

---

### FRONT OF RECORD CARD

UNIVERSITY CREDIT IN PHYSICAL EDUCATION

Grade

Grade

Medical Report:

Remarks:

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26



# BACK OF RECORD CARD

TEST	DATE	EVENT	GRADE					D	C	B	A	
			PERCENTAGE C/F.P. POINTS									
			1	2	3	4						
AGILITY	1st	RUN (SEC)	14%	14	13%	13%	4	3	12%	6	7	7%
	2nd	JUMP (IN)	145	154	162	170	178	186	194	202	210	10%
	3rd	VAULT (IN)	48	50	52	54	56	58	60	62	64	21%
SWIMMING	1st	SCALE (SEC)	38	30	23	18	13	10	9	8	7	5%
	2nd	FALL (IN)	12	18	24	30	36	42	48	54	60	66
	3rd	SPEED (SEC)	26	24	22	20	18	16	15	14	13	12
DEFENSE	1st	DIVING	15	14	13	12	11	10	9	8	7	6
	2nd	RESCUE (YDS)	1	5	9	13	17	21	25	29	33	37
	3rd	STROKES	15	14	13	12	11	10	9	8	7	6
MEASUREMENTS	1st	DISTANCE (YDS)	20	40	60	80	100	120	140	160	180	200
	2nd	WEIGHT										
	3rd	CONTROL										
	1st	BLOCKS AND COUNTERS										
	2nd	BLOCKS AND COUNTERS										
	3rd	BLOCKS AND COUNTERS										
	1st	HOLDS										
	2nd	HOLDS										
	3rd	HOLDS										
	1st	INITIATIVE AND SPIRIT										
	2nd	INITIATIVE AND SPIRIT										
	3rd	INITIATIVE AND SPIRIT										
	1st	STANDING HEIGHT (IN)	63	64	65	66	67	68	69	70	71	72
	2nd	SITTING HEIGHT (IN)	33	34	35	36	37	38	39	40	41	42
	3rd	WEIGHT (LBS)	105	114	122	130	138	146	154	162	170	178
	1st	LUNG CAP (CU IN)	175	195	215	235	255	275	295	315	335	355
	2nd	LUNG CAP (CU IN)										
	3rd	LUNG CAP (CU IN)										

NAME

AGE

PREP.

COL

CLASS

that a grade of B is given to those whose scores lie between  $\frac{1}{2}$  and  $1\frac{1}{2}$  sigmas above the mean; that a grade of D is given those whose scores lie between  $\frac{1}{2}$  and  $1\frac{1}{2}$  sigmas below the mean, and that the grades E and A respectively are given to those whose scores fall lower than  $1\frac{1}{2}$  sigmas below the mean and to those whose scores fall higher than  $1\frac{1}{2}$  sigmas above the mean.

Thus in each event out of every hundred individuals tested, approximately 38 will receive the grade of C; approximately 24 will receive the grade of B; approximately 24 will receive the grade of D; approximately 7 will receive the grade of E; and approximately 7 the grade of A. See Table II.

TABLE II

Grade E .....	$1\frac{1}{2}$ to — below the mean
Grade D .....	$\frac{1}{2}$ to $1\frac{1}{2}$ below the mean
Grade C .....	$\frac{1}{2}$ below to $\frac{1}{2}$ above the mean
Grade B .....	$\frac{1}{2}$ to $1\frac{1}{2}$ above the mean
Grade A .....	$1\frac{1}{2}$ to — above the mean

The use of the sigma distribution of the grades A, B, C, D, and E, was adopted after a thorough investigation of all the approved methods advocated by writers<sup>1</sup> who have treated at some length the subject of grade distribution.

Practically all authorities agree that the normal frequency curve should be used as the basis for grading and that five comparable steps should be established. The only difference of opinion evident is with reference to the size that these steps should assume. The difference of opinion and the decided advantages which the use of the standard deviation offers lead to the acceptance of the plan recommended by Rugg.<sup>2</sup>

Thus through the use of standard deviation, the grades in each event are rendered comparable; for example, an individual receiving the same score in each of two different activities will be relatively as clever in each of these two events. That is, there will be as many individuals in any group of U. C. freshmen who are better than he is or worse than he is in each of the two tests in which he made the equivalent scores. In other words, it takes the same total ability in each of the various activities if the individual is to receive identical scores in all of these activities. This fact, of course, is evident when one considers that in using the sigma as the basis of measuring, one has converted the units of measure in the various events investigated to the same common measuring unit with the mean serving as the reference point. It is to be expected then that in any group of freshmen entering the University of California, there will be found as many men in each of the events receiving respectively As, as many Bs, Cs,

<sup>1</sup> H. O. Rugg. "Teachers' Marks & Marking Systems." *Ed. Admin. & Superv.*, I Feb., 1915.

<sup>2</sup> H. O. Rugg. "Teachers' Marks & the Reconstruction of the Marking System," *Ed. Sch. Jr.*, May, 1918.

Ds, and Es, and that the contestant therefore will be assured of being graded as fairly in any one of the events as in any other.

In considering the scoring card, however, it must not be assumed that equal horizontal distances on any given scale represent equal increments of difficulty in the making of progress in the event concerned. An attempt at the evaluation of the relative difficulty encountered in accomplishing progress over equal increments of distance on the horizontal scale for any event, necessitates the comparison of the relative areas subtended by the corresponding portions of the base line on the normal frequency distribution polygon.

For example, the relative difficulty of increasing speed in the 100-yard dash from  $12 \frac{3}{5}$  seconds to  $12 \frac{1}{5}$  seconds would be to the difficulty of increasing one's speed from  $11 \frac{1}{5}$  seconds to  $10 \frac{4}{5}$  seconds inversely as the corresponding areas  $x$  and  $y$  are to one another. (See history card) and not as the horizontal distance  $12 \frac{3}{5}$ - $12 \frac{1}{5}$  is to  $11 \frac{1}{5}$ - $10 \frac{4}{5}$  which would indicate equivalent difficulty in the making of equivalent increments of progress over the different divisions of the scale. This would mean that it would be approximately 7 times as hard for a man to increase his speed by  $\frac{2}{5}$  of a second under the "A" portion of the scale as compared with the difficulty of increasing his speed an equivalent amount within the "C" portion of the scale. In short, the scales presented represent in graphic form the T scale evolved by McCall.<sup>3</sup>

It is understood that a variety of inaccuracies are bound to occur in the processes of developing standards based upon the performance data of human beings and in the administration of these standards as a routine procedure in the measuring of other human subjects.

The time of day, climatic conditions such as temperature, relative humidity, and the technique of administering the tests may all influence the actual performance of the human subject, therefore, the reliability developed in any of these events may be lowered by poorly controlled environmental, or administrative conditions.

It is also evident that the standards presented cannot be justly applied to individuals who are distinctly abnormal, either from the standpoint of health or physical conformation. College freshmen who showed marked departure from the normal as to health, or as to matters of conformation such as height, weight, or physical deformities were excluded from the group otherwise selected at random from the men of the freshman class.

The measures presented, especially those representing the less accurate objective data, and the purely subjective data will undoubtedly be readjusted through subsequent studies.

<sup>3</sup> W. A. McCall. *How to Measure in Education*. Macmillan, 1922, pp. 57-62.

The findings for the men of the freshman class at the University of California in all probability are quite different from the findings that might be discovered in testing a similar group of young men taken from the industries or even taken from a university in a different part of the country.

All that can be justly claimed for any plan of setting up a scale for measuring human performance is that the standards, if properly developed, may be looked upon as *fairly* accurate for a strictly comparable group of subjects providing the conditions under which the tests are applied, and the administrative technique, are uniform throughout the administration of the tests.

At this point it may again be wise to reiterate the conviction of the writer that the essential purpose of physical efficiency testing is not highly accurate statistical compilation but practical classification and the stimulation of interest and incentive along practical lines for physical education broadly conceived.

The events—run, jump, vault, and scale—were tested for reliability through giving each event twice to two hundred men on succeeding Saturdays and correlating the scores. The following table gives the results of this investigation.

TABLE III

Event	Reliability Coefficient
Run	.91
Jump	.80
Vault	.72
Scale	.73

It will be seen at once that the above events are fairly reliable and that a man taking the test twice will, in the great majority of cases, receive the same grade if training has not intervened.

Doctors Cozens and Bovard<sup>4</sup> with a somewhat better controlled administration found the reliabilities in objective tests of this type to range from .8 to .968.

#### *Skewed curves.*

The curves for the events *wall-scaling* and *swimming speed* are skewed so that it is necessary to use a slightly different method of subdividing these curves. (See figure 6.) The frequency curve was plotted from the data and the resulting curves subdivided on a percentile basis, using the sigma value as the unit of division. This data was then used in constructing respective scales on the scoring card.

The data from which the swimming standards were derived was, of necessity, gathered from the performance of those freshmen who

<sup>4</sup>Frederick Warren Cozens. *Measurement of General Athletic Ability in College Men*, University of Oregon Publication, April, 1929.

were able to swim. These standards, however, work out fairly well in grading the students who learn to swim after they enter the University.

Personal opinion as to the relative form presented in diving and in the execution of swimming strokes forms the only basis for establishing what must be classed as empirical standards for these events. Analysis of the swimming distance records presents a curve which is badly skewed to the upper end. It would, therefore, be useless to employ strict statistical methods in establishing standards for this event. The reason for the skewness and futility of the statistical approach as far as distance swimming is concerned is clear when one considers the practical aspects of the test. The higher scores in the distance test would represent miles of swimming on the part of a good many individuals.

The rescue test is not accurate from the statistical point of view and clearly is not adapted for use in the grading of non-swimmers. The speed swimming event is relatively accurate as it permits of objective measurement.

#### *Defense tests.*

The defense tests are not susceptible of statistical treatment as has been indicated previously. The points representing the various gradations of performance in the defense test, as in the other subjective tests, are entered on the score card merely to unify, systematize, and *visualize the relationship* between the empirical scores given in these tests and those assigned in the objective tests. For similar reasons, the measurements—standing height, sitting height, weight, and vital capacity—are included on the one card. These measurements are, of course, not used for scoring and grading, but their inclusion enables the student to again see *graphically the statistical relationship* of his various structural traits to those of his fellows.

#### *Wall-scaling tests.*

The wall-scaling event was included among the tests for other than statistical reasons; namely, its practical significance and its power to test the coördinative ability and strength of the upper body. The curve for this event is badly skewed (figure 5-A) but was made comparable to the normal curve by using percentile values with the normal sigma values as units. That this procedure was justified is shown by the results of later testing illustrated in figure 5.

It is possible, therefore, to tell from the card at a glance the weakest and strongest points in the individual's physical ability as interpreted by the events included in the test. It has also been found that the events may be scored more quickly and accurately in the field by the use of this type of card since the scorer does not have to write numbers but needs only place a single check mark or dot. The card

is also designed to show progress in an event through a series of re-tests following periods of training.

### Explanation of Charts

In considering all charts, the primary objects of the tests must be kept in mind; i. e.:

1. To interest the boy in his own relative standing as a physically educated being.
2. To determine as nearly as possible the boy's actual capacity that he may be intelligently placed and thus, preventing a "lockstep procedure," use his time to best advantage.
3. To demonstrate forcefully to the student any "shortcomings" he may have.
4. To encourage the student to improve his physical equipment for practical as well as idealistic reasons.
5. Finally and incidentally to gain data for statistical investigation.

It must be realized that the tests measure ability *plus interest*, and that ability and interest are extremely variable in any group of individuals and under conditions difficult of control.

The thing that is most evident from all of the charts is that in each of the events there is a general trend toward a symmetrical distribution of the students according to ability. This is what would be expected.

Those events which seem to show this symmetrical distribution the least are the ones in which the element of interest plays the biggest part.

The broad jump (figure 2) is an example of an event in which the interest element is able to play only a minor part. Each boy is given three jumps and the best jump is measured. Most boys will not repeat this test in an effort to improve their score, feeling that they have been given a fair trial. They will, however, re-run the 100-yard dash, if on the first trial they find they lack only a fraction of a second of getting into the next higher grade division. This factor will be more readily appreciated through considering the individual charts, thus:

*Figure 1—100-yard dash.* The curve shows a fairly even and systematical distribution with a central "hump" and tails which taper off at each end. The peak at 14.0 is accounted for by the fact that this point represents practically the lower limit of the scoring card from which the data for this curve were taken. Recorders are likely to give a man this score rather than go to the trouble of entering a record in longhand. The large peak at  $13 \frac{1}{5}$  is the result of a desire to get a passing grade (D). In the same manner a mark of  $12 \frac{2}{5}$  gives the student a grade of (C), "gentleman's grade," and puts him in the upper half. Grades (B) and (A) require too much effort to



be sought after by many, so show no peaks at the lower limit of these grade divisions.

*Figure 2—broad jump.* Aside from being a smooth curve, this figure shows little except a sudden rise at the 168 inch mark, which is the lowest mark granting a passing grade. As above stated, re-trials are few in this event, except to "get by" the test.

*Figure 3—vault.* This figure illustrates the part that the "interest factor" can play in the results of a test. It is very easy with a little practice, to perfect one's form, and add 6 to 12 inches to one's performance. This event, therefore, offers splendid opportunity to the willing student to make high grades. The result is, that at 49, which gives a (D), 54 which gives a (C), 59 which gives a (B), and 64 which gives an (A), we find four high peaks. The method employed to eliminate these peaks is discussed above.

*Figure 4—fall.* This figure tells the same story as figure 3 of the vault, except that it only applies in the lower half of the scale. In the upper half continued effort is discouraged by the examiners unless the student shows excellent form, the high dive being a dangerous exercise for the clumsy performer. A preliminary check of each man's coordinative power in the similar event of the simple forward roll is made before he is allowed to try the dive.

*Figure 5—wall scale.* This is the most interesting of all the figures. First except for the one drop at  $6\frac{2}{5}$ , it is the most symmetrical of all the activity tests. Second, it illustrates the results of the efforts made to equalize the marking by taking account of "skewness." It must be considered in connection with figure 5a.

*Figure 5a.* This is the distribution obtained from the data gathered in the original test. It is seen to skew to the upper end. To allow for this the new marking was established on a percentile basis, using the sigma values gotten in the normal distribution as a standard.

*Figure 6—swimming speed.* This gives a curve much like 5a (i.e., "skewed" toward the upper end). An attempt has been made to adjust this in the new card.

*Figures 7 and 8* are included to show the almost absolute symmetry which the passive measurements give. Figures 8 and 9 emphasize the points made concerning the influence of effort. From all the charts it would appear that a grade of (B) is relatively the least highly desired of all grades, while (C), (A), and (D) are striven for in the order given. Figure 8 graphically illustrates this situation.

The obvious method of eliminating the peaks in the above curves is to equalize the incentive for improvement at all points along the scale so that the effort factor will be constant. The attempt has been made to accomplish this through introducing the system of "efficiency points."

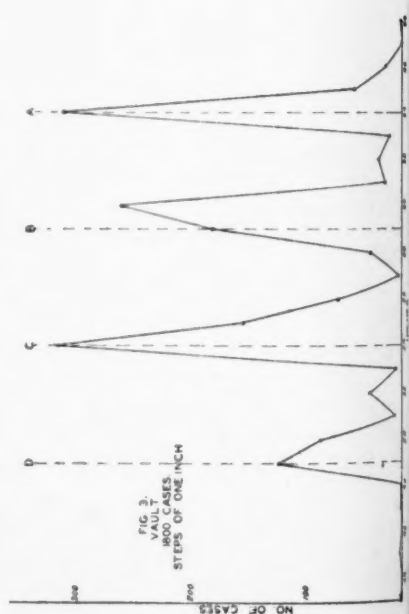
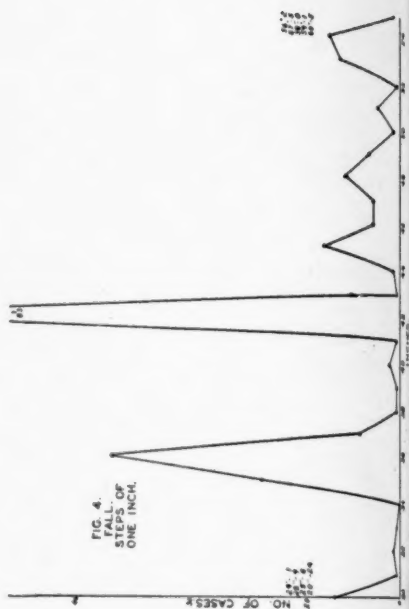
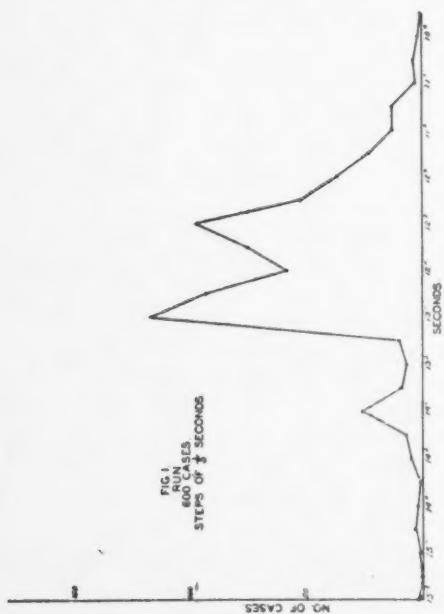
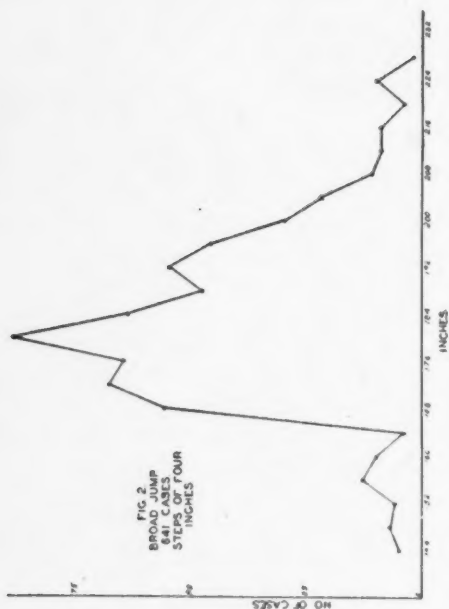


FIG. 5a  
200 CASES  
STEPS OF ONE SECOND.

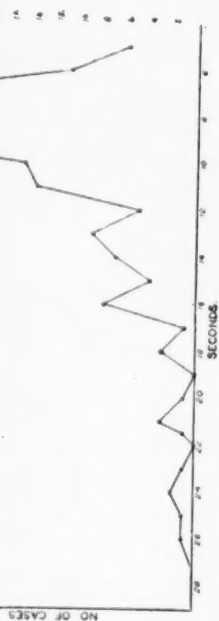


FIG. 5  
WALL SWIMMER  
55 FAILED COMPLETELY  
2 ABOVE LIMIT OF CARD  
300 CASES.

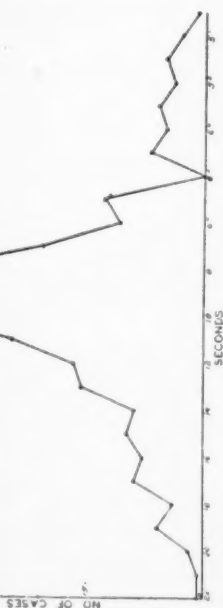


FIG. 6  
DISTANCE SWIM  
STEPS OF 50 YARDS  
200 CASES

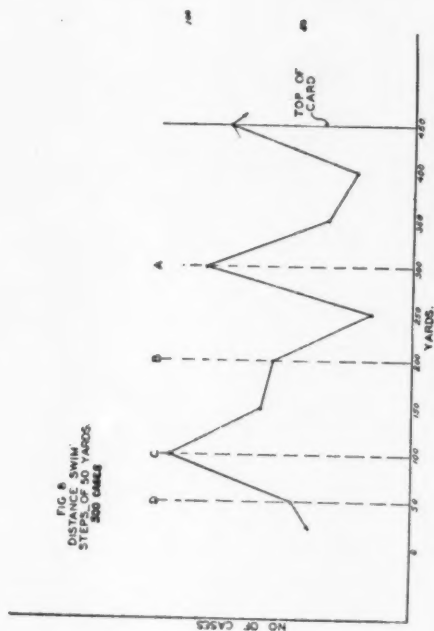
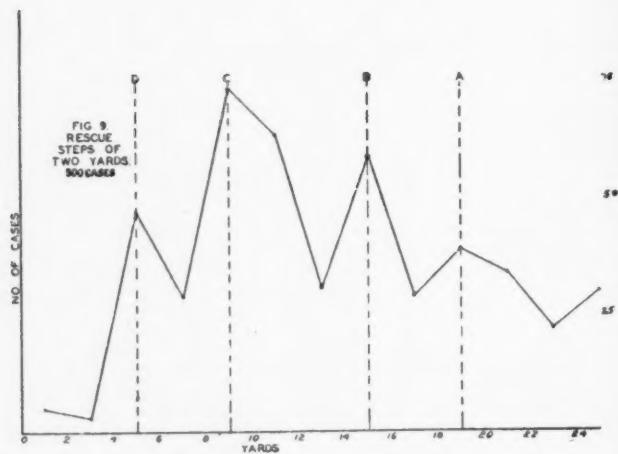
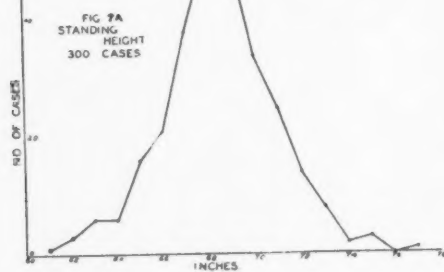
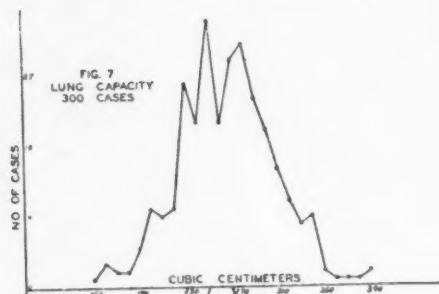


FIG. 6  
SWIMMING SPEED  
400 CASES  
STEPS OF ONE SECOND  
M-17.6  
8-3





# A Study of the Anthropometric Measurements of College Women

AN ANSWER TO THE COLLEGE GIRL'S QUERY—  
"HOW MUCH SHOULD I WEIGH?"

By MARY LOUISE BOILLIN

*Department of Physical and Health Education  
State Teachers College, Fredericksburg, Virginia*

THE question, "How much should I weigh?" is indeed a live one. A comparatively few years ago tables were formulated which determined how much individuals should weigh through consideration of their heights and ages. This pioneer step in the direction of objective measurement in the field of health has served a real purpose, but of more recent years there has been felt a keen need for a definite change in standards. Suggestions to this end have begun to be made by a few interested investigators in the field, often with classifying persons into three or more types or standard classes of build such as "slender," "medium," and "stocky"; "slender," "slender medium," "medium"; "medium heavy," "heavy";—and still other classifications. For determining the normal weight of an individual one investigator uses heights and several girths; some have used indices of various kinds; a girth has been combined with trunk length;—various other measurements and combinations of measurements have been used, indicating the worth of other anthropometric dimensions.

We know that if an individual is tall, it does not necessarily follow that he has very broad shoulders or a very deep chest, for he may be tall yet comparatively narrow in shoulder width, or he may be tall and wide of shoulders yet relatively shallow of chest. We know, too, that a short person may not necessarily have narrow shoulders or a shallow chest, for we all know persons who are small as regards stature who are quite the reverse, comparatively, in depth of chest or breadth of shoulders. We see too, especially in women, those who are large as to framework in the upper trunk and comparatively small as to framework in the lower part of the body; likewise those whose framework in the lower part of the body is much larger comparatively than the framework of the upper trunk.

Employing standard tables now in general use, we have all been more or less accustomed to saying that a person is expected to weigh so many pounds because of being so many inches tall, hence consider-

ing only the dimensions of height as important for estimating weight expectancy. However, people are not just cylinders with length, but in addition, they vary in depth and breadth of framework. These variations do not occur categorically, making definite types of body build, but instead they vary through all degrees and in innumerable combinations. Observation of these many variations in combination of dimensions has made it increasingly apparent that more factors than one's height must be taken into consideration in order to make a fairly good estimate of weight expectancy.

IN a recent study<sup>1</sup> on girls of a well known eastern college that draws its students from all over the United States, the correlation technique was employed on measurements of over eight hundred girls, all possible partials and multiples of weight with five skeletal dimensions—height, width of shoulders, width of chest, width of hips, and depth of chest—were determined. Zero correlations of these dimensions with weight were: height .46, width of shoulders .49, width of chest .63, width of hips .61, and depth of chest .63. Holding the other four factors constant, height presented a correlation of only .29. Similarly, shoulder width presented a correlation of .16, chest width a correlation of .34, hip width a correlation of .32, while chest depth presented a correlation of .51. Chest depth then, of itself, presented the highest, and height of itself, next to the least, relationship with weight, indicating that to say a girl should weigh so many pounds because she is of a certain height, is less accurate than to say she should weigh so many pounds because her chest is of a certain depth. But while our estimate of weight expectancy is better if we consider chest depth than height, this estimate is considerably improved if in addition to height and chest depth, we take into account her breadth of chest, hips, and shoulders. We may say, then, that we would expect a girl to weigh so many pounds not merely because she is so many centimeters tall, but also because her chest is so many centimeters deep, and her chest, hips, and shoulders each so many centimeters in width—this amount of weight representing the most probable weight expectancy for girls (of a similar group) of similar bony framework.

COMPARISON, on a number of cases, of weight expectancy from skeletal tables (computed from a regression equation based on five skeletal measurements), with weight expectancy from height-weight-age tables (standard tables now in use) presents some rather interesting results. The standards used for comparison with skeletal tables are standard Life Insurance tables. As the skeletal tables were made from measurements taken without clothing or shoes, and Life

<sup>1</sup> Mary Louise Boillin. *Determination of the Interrelations, Partial and Multiple, Between Various Anthropometric Measurements of College Women*, Bureau of Publications, Teachers College, Columbia University, New York City.



Insurance examinations are made with clothing and shoes, in making our comparisons we have taken into consideration, as recommended for women, 1½ inches for height and 4 pounds for clothing. The results obtained may be grouped as follows:

1. Cases regarded as underweight by height-weight-age tables, that appear to be either normal weight or overweight when five skeletal dimensions are considered in determining weight expectancy.
2. Cases regarded as overweight by height-weight-age tables, that appear to be either normal weight or underweight by skeletal tables.
3. Cases regarded as having just normal weight by height-weight-age tables, that appear to be either underweight or overweight by skeletal tables.
4. Cases regarded as underweight by height-weight-age tables, that remain apparently more or less underweight when skeletal tables are applied. These may be roughly divided as follows:
  - (a) Those that seem still considerably underweight by skeletal tables as well as by standard tables.
  - (b) Those that seem still somewhat underweight, but by a much less amount by skeletal tables than by standard tables.
  - (c) Those that seem even more underweight by skeletal tables than by standard tables.
5. Cases regarded as overweight by height-weight-age tables that remain apparently more or less overweight when skeletal tables are applied. These may be roughly divided as follows:
  - (a) Those that seem considerably overweight by skeletal tables as well as by standard tables.
  - (b) Those that seem still somewhat overweight, but by a much less amount, by skeletal tables, than by standard tables.
  - (c) Those that seem even more overweight by skeletal tables than by standard tables.
6. Cases that appear to be of normal weight by both height-weight-age, and skeletal, tables.

**A**N illustration of each of these is offered. Other cases equally as interesting could be cited.

The regression equation on which the skeletal tables are based is given below, together with the working out of one of the cases offered.

$$\begin{array}{lcl} \text{Expectation in Weight} & = & 1.137 \text{ Width of Hips} + .2384 \text{ Height} \\ \text{(in kilograms)} & & + 2.092 \text{ Depth of Chest} + .407 \text{ Bia-} \\ & & \text{cromial Width} + 1.302 \text{ Chest width} \\ & & - 95.1025. \end{array}$$

In substituting in this equation, all dimensions are to be used in terms of centimeters. Measurements should be recorded to the near-

est tenth of a centimeter except height, which is measured to the nearest whole centimeter.<sup>2</sup>

1. *Case A* by height-weight-age tables seems 20 pounds underweight, but when five skeletal dimensions are included in determining weight expectancy, she is just normal weight. This girl is tall, hence the large weight demanded for her by standard tables. But the rest of her skeletal framework is not as large proportionately as her height, especially is her chest depth rather small, so when her chest, hip, and shoulder dimensions are included with height in determining weight expectancy, she seems not overweight at all, but just normal weight.<sup>3</sup>

*Case A*—16 years 8 months

		table readings
Height	175.0 cm.	41.7
Width of shoulders	36.2 cm.	14.7
Width of chest	24.1 cm.	31.4
Width of hips	27.5 cm.	31.3
Depth of chest	14.2 cm.	29.7
		148.8
		—95.1
Weight expectancy by skeletal tables		53.7 kg. (118.14 lb.)
Actual weight		54.2 kg. (119.24 lb.)
		+ .5 kg.
		2.2 lb. in 1 kg.
		+1.10 lb.

Weight expectancy by height-weight-age tables = 138 lb.

*Case B* by height-weight-age tables seems 11 pounds underweight, but by skeletal tables seems, instead, 8 pounds overweight.

*Case B*—18 years 4 months

Height	163.0 cm.
Width of shoulders	35.1 cm.
Width of chest	23.7 cm.
Width of hips	24.1 cm.
Depth of chest	15.5 cm.
Weight expectancy:	
By height-weight-age table	126.00 lb.
By skeletal table 48.8 kg. or	107.36 lb.
Actual weight 52.5 kg. or	115.50 lb.

The chest and hip dimensions of both these girls do not warrant as high weight expectancies as the average weights for their heights as given in standard tables. Girls whose builds are somewhat similar to these are often thought underweight when they

<sup>2</sup> M. L. Boillin, *op. cit.*, p. 44.

<sup>3</sup> In this article, the expression "normal weight" is used to include from two pounds under, or two pounds over, the predicted or expected weight.

are actually small-boned instead. To say that a girl is underweight for her height may be, then, a case of having small chest and hip dimensions.

2. *Case A* by height-weight-age tables seems 24 pounds overweight, but when five skeletal dimensions are included in determining weight expectancy, she is just normal weight. This girl is only of medium height, hence tables with height as the only skeletal determinant do not allow her a very large weight. But her build is "stocky," she is deep of chest and wide of hips and shoulders, so when her chest, hip, and shoulder dimensions are included with height in determining her weight expectancy, she seems not overweight at all but normal weight for one of her skeletal dimensions. Her whole framework, with the exception of her height, is large, so we should expect her to weigh proportionately more than if the rest of her skeletal dimensions were also correspondingly small.

*Case A*—19 years 5 months

Height .....	163.0 cm.
Width of shoulders .....	41.2 cm.
Width of chest .....	26.4 cm.
Width of hips .....	28.7 cm.
Depth of chest .....	20.3 cm.
Weight expectancy:	
By height-weight-age table .....	128.00 lb.
By skeletal table .....	70.1 kg. or 154.22 lb.
Actual weight .....	69.0 kg. or 151.80 lb.

*Case B* by height-weight-age tables seems 22 pounds overweight, but by skeletal tables seems instead 5 pounds underweight.

*Case B*—19 years 3 months

Height .....	153.0 cm.
Width of shoulders .....	37.6 cm.
Width of chest .....	25.6 cm.
Width of hips .....	30.0 cm.
Depth of chest .....	19.5 cm.
Weight expectancy:	
By height-weight-age table .....	116.00 lb.
By skeletal table .....	64.9 kg. or 142.78 lb.
Actual weight .....	62.5 kg. or 137.50 lb.

*Case C* by height-weight-age tables seems 41 pounds overweight, but by skeletal tables seems instead 4 pounds underweight.

*Case C*—19 years 4 months

Height .....	164.0 cm.
Width of shoulders .....	37.6 cm.
Width of chest .....	29.5 cm.
Width of hips .....	30.8 cm.
Depth of chest .....	22.1 cm.

## Weight expectancy:

By height-weight-age table .....	128.00 lb.
By skeletal table .....	78.9 kg. or 173.58 lb.
Actual weight .....	77.0 kg. or 169.40 lb.

*Case D* by height-weight-age tables seems 9 pounds overweight, but by skeletal tables seems instead 18 pounds underweight.

*Case D*—18 years 6 months

Height .....	159.0 cm.
Width of shoulders .....	38.8 cm.
Width of chest .....	26.5 cm.
Width of hips .....	29.2 cm.
Depth of chest .....	19.7 cm.
Weight expectancy:	
By height-weight-age table .....	121.00 lb.
By skeletal table .....	67.5 kg. or 148.50 lb.
Actual weight .....	59.3 kg. or 130.46 lb.

We have presented here several illustrations somewhat similar to each other for the reason that builds resembling these seem especially penalized by the judging of weight expectancy from height alone. The chest and hip dimensions of these girls apparently demand more weight than the average weights for their heights as given in standard tables. Judgment of weight expectancy from only the skeletal dimensions of height is penalizing to girls with similar bony structure in that they may be thought overweight when they may possibly be underweight instead.

3. *Case A* by height-weight-age tables seems of normal weight. By skeletal tables which use four other dimensions in addition to height, she seems 10 pounds underweight.

*Case A*—18 years 2 months

Height .....	171.0 cm.
Width of shoulders .....	36.4 cm.
Width of chest .....	25.3 cm.
Width of hips .....	31.3 cm.
Depth of chest .....	18.2 cm.
Weight expectancy:	
By height-weight-age table .....	138.00 lb.
By skeletal table .....	67.1 kg. or 147.62 lb.
Actual weight .....	62.5 kg. or 137.50 lb.

*Case B* by height-weight-age tables seems of normal weight. By skeletal tables she seems 12 pounds overweight.

*Case B*—18 years 0 months

Height .....	163.0 cm.
Width of shoulders .....	33.0 cm.
Width of chest .....	22.6 cm.
Width of hips .....	26.6 cm.
Depth of chest .....	16.8 cm.

Weight expectancy:

By height-weight-age table .....	126.00 lb.
By skeletal table .....	52.0 kg. or 114.40 lb.
Actual weight .....	57.5 kg. or 126.50 lb.

Both these cases are taken from a group of those who, with reference to standard tables, are regarded as having just normal weight. But when we use five skeletal dimensions for determining weight expectancy we find that Case A appears underweight and Case B overweight. In the first case, the body framework seems to demand more weight than does height, and in the second case the body framework seems to demand less weight than does height. This may suggest that perhaps it might be well to give attention to those individuals whose weight we have heretofore thought to be exactly correct.

4. *Case A* by height-weight-age tables seems 26 pounds underweight. When five skeletal dimensions are used in determining weight expectancy, she still seems 22 pounds underweight.

*Case A*—19 years 9 months

Height .....	171.0 cm.
Width of shoulders .....	38.2 cm.
Width of chest .....	26.4 cm.
Width of hips .....	29.0 cm.
Depth of chest .....	16.2 cm.

Weight expectancy:

By height-weight-age table .....	141.00 lb.
By skeletal table .....	62.5 kg. or 137.50 lb.
Actual weight .....	52.5 kg. or 115.50 lb.

*Case B* by height-weight-age tables seems 37 pounds underweight, but by skeletal tables seems only 8 pounds underweight.

*Case B*—19 years 10 months

Height .....	173.0 cm.
Width of shoulders .....	32.5 cm.
Width of chest .....	22.6 cm.
Width of hips .....	27.5 cm.
Depth of chest .....	15.7 cm.

Weight expectancy:

By height-weight-age table .....	145.00 lb.
By skeletal table .....	52.8 kg. or 116.16 lb.
Actual weight .....	49.1 kg. or 108.02 lb.

*Case C* by height-weight-age tables seems 7 pounds underweight. By skeletal tables she seems 23 pounds underweight—16 pounds more underweight than standard tables indicate.

*Case C*—18 years 7 months

Height .....	159.0 cm.
Width of shoulders .....	36.6 cm.
Width of chest .....	25.4 cm.

Width of hips .....	27.7 cm.
Depth of chest .....	19.2 cm.
Weight expectancy:	
By height-weight-age table .....	121.00 lb.
By skeletal table .....	62.5 kg. or 137.50 lb.
Actual weight .....	52.0 kg. or 114.40 lb.

Case A is representative of those who appear considerably underweight, both by skeletal as well as by height-weight-age tables. Case B indicates that sometimes while an individual may be underweight, perhaps she is not nearly as much so as it seems by determination from height alone. Case C indicates that it is quite possible for individuals to be even more underweight when weight expectancy is computed from five skeletal dimensions than when using height as the only skeletal determinant. In the first two cases the body framework demands somewhat less weight than does height alone, and in the third case the body framework demands somewhat more weight than does height. This third case is another example of a framework that seems decidedly penalized by the determination of weight expectancy from height alone, as it appears to demand quite a bit more weight than height alone would indicate.

5. *Case A* by height-weight-age tables seems 24 pounds overweight. When five skeletal dimensions are used in determining weight expectancy, she still seems 18 pounds overweight.

*Case A—17 years 7 months*

Height .....	158.0 cm.
Width of shoulders .....	35.0 cm.
Width of chest .....	24.4 cm.
Width of hips .....	27.5 cm.
Depth of chest .....	17.5 cm.
Weight expectancy:	
By height-weight-age table .....	119.00 lb.
By skeletal table .....	56.5 kg. or 124.30 lb.
Actual weight .....	64.8 kg. or 142.56 lb.

*Case B* by height-weight-age tables seems 39 pounds overweight, but by skeletal tables seems only 11 pounds overweight.

*Case B—17 years 9 months*

Height .....	159.0 cm.
Width of shoulders .....	37.8 cm.
Width of chest .....	28.0 cm.
Width of hips .....	29.6 cm.
Depth of chest .....	18.5 cm.
Weight expectancy:	
By height-weight-age table .....	119.00 lb.
By skeletal table .....	67.1 kg. or 147.62 lb.
Actual weight .....	72.0 kg. or 158.40 lb.



Case C by height-weight-age tables seems 10 pounds overweight. By skeletal tables she seems 19 pounds overweight, 9 pounds more overweight than height-weight-age tables indicate.

Case C—17 years 6 months

Height .....	166.0 cm.
Width of shoulders .....	36.5 cm.
Width of chest .....	23.6 cm.
Width of hips .....	25.0 cm.
Depth of chest .....	17.7 cm.
Weight expectancy:	
By height-weight-age table .....	131.00 lb.
By skeletal table .....	55.5 kg. or 122.10 lb.
Actual weight .....	64.2 kg. or 141.24 lb.

Case A is representative of those who appear considerably overweight by skeletal, as well as by height-weight-age tables. Case B indicates that sometimes while an individual may be overweight, perhaps she is not nearly as much so as it seems by determination from height alone. Case C indicates that it is possible for individuals to be even more underweight when weight expectancy is computed from five skeletal dimensions than when using height as the only skeletal determinant. In the first two cases, the body framework demands somewhat more weight than does height alone, and in the third case the body framework demands somewhat less weight than does height.

6. Case A is representative of those who appear to be of normal weight not only by standard height-weight-age tables but also when—in addition to height—chest, hip, and shoulder dimensions are included in determining weight expectancy.

Case A—18 years 5 months

Height .....	153.0 cm.
Width of shoulders .....	35.3 cm.
Width of chest .....	23.7 cm.
Width of hips .....	28.8 cm.
Depth of chest .....	15.5 cm.
Weight expectancy:	
By height-weight-age table .....	114.00 lb.
By skeletal table .....	51.8 kg. or 113.96 lb.
Actual weight .....	52.0 kg. or 114.40 lb.

However, it is not to be understood that within this age group skeletal dimensions are responsible for all of the individual differences in weight, for the multiple (.83) of weight and the five dimensions is low enough to indicate that the weight of a girl of late adolescence may be of real diagnostic value for indicating degree of health. If skeletal measurements were responsible for all of the individual differences in weight, then certain habits of living, such as amount and

kind of food, rest, and exercise taken, could make no real differences in one's weight.

Since individual differences in weight are not accounted for entirely by skeletal measurements, then we may say that at this age, weight may possibly be of definite significance—that decided fluctuations from a girl's weight expectancy, as determined through use of her skeletal measurements, may be of real diagnostic worth as a warning sign to her, indicating the desirability of altering some of her habits of living.

THE tenor of this article is not intended to deplore the existence of height-weight-age, or standard, tables. Rather do we appreciate these pioneer steps, for the influence that has been of incalculable benefit to many. Individual effort to attain normal weight (which was really the average weight for each height) has often resulted in much careful attention being directed toward improvement in individual personal habits, i.e., the eating of more nourishing foods, the taking of more regular daily exercise and more adequate rest, and the establishment of other habits conducive to a more beneficial regime of living.

In the future, it may be possible that variations in weight, apart from skeletal expectations, may be of clinical value in the prediction of predisposition to disease. However, if the weight of a girl of late adolescence is to be considered any measure at all of state of health, and if decided fluctuations from the normal expectancy are to be regarded as any measure of malnutrition or other symptom of impaired physical condition, then we may need to reorganize our ideas of what we expect her to weigh.

# A Study of Rhythmical Capacity and Performance in Motor Rhythm in Physical Education Majors

By THOMAS ANNETT

*State Teachers College, La Crosse, Wisconsin*

## Statement of the Problem

THIS study will attempt to discover to what extent natural grace in rhythmic activities, as illustrated by dancing, can be predicted from sense-of-rhythm scores, as measured by the Seashore test of rhythm.<sup>1</sup>

Rath<sup>2</sup> makes the statement "The literature on rhythm is principally of a philosophical nature. Science has not yet directed its penetrating and analyzing vision towards rhythm in human nature." It is hoped in this study to approach rhythm from a scientific basis giving some light on the correlation between rhythmical capacity and performance in motor rhythm.

The teaching of special subjects such as music and physical education, has suffered from lack of research. The research worker, in many cases, has confined his attention to academic subjects. For instance, one of Kelley's judges in rating tests says of the *Kwalwasser-Ruch Tests of Musical Accomplishment*<sup>3</sup> "what do we know about this anyhow? Better let musicians judge this."<sup>4</sup>

On the other hand, the worker in the special field has been so engrossed with the subject itself that he has not busied himself with improving methods of teaching it.

## Value of the Study

The instructor of physical education teaches many forms of dances: folk dancing, clogging, natural dancing, gymnastic dancing, aesthetic dancing, and the like. All these depend on rhythm. In so far as the Seashore test measures rhythm, to that extent it can be of use to the physical education worker in his teaching.

The Seashore test is already used by the music instructor in many

<sup>1</sup> An abstract of an M.A. thesis submitted in the Teachers' College of the University of Cincinnati.

<sup>2</sup> Emil Rath, "Polyrhythmic Gymnastics" RESEARCH QUARTERLY of the American Physical Education Association, I, (March 1, 1930) 9-23.

<sup>3</sup> Jacob Kwalwasser and G. M. Ruch, *Kwalwasser-Ruch Test of Musical Accomplishment*, (Iowa City: The University of Iowa, 1924) p. 8.

<sup>4</sup> Truman Lee Kelley, *Interpretation of Educational Measurements*, (Yonkers-on-Hudson, New York: World Book Co., 1927) p. 276.

elementary and high schools. If, in addition, it can be used by the teacher of physical education, the test will serve a twofold purpose.

Doubtless the instructor of physical education in the college will be interested in knowing to what extent the Seashore test will help him in determining the motor rhythm capacity of his student.

Further, it is hoped that the results of this study will help the student who may be interested in a combination of subjects such as taking a major in physical education and a minor in music, or vice versa.

Therefore, it is the purpose of this study to determine what correlation, if any, exists between musical rhythm and motor rhythm; whether the person who ranks high in one also ranks high in the other, et cetera.

### Related Problems

Doubtless other qualifications than acute perceptions of rhythm enter into dancing, which suggests the following related questions:

1. What effect does the frequent dancing of an individual have on his ability to dance?
2. How much does interest in dancing seem to affect ability in performance involving motor rhythm?
3. How does training affect the skill of the dancer?
4. Does the age at which the child begins his dancing have anything to do with this skill as developed later in life?
5. Is the public school doing its duty to the prospective dancer or teacher of motor rhythm? In other words, have students had frequent opportunities for development of their rhythmic capacity in the public schools?
6. Does pleasure in dancing seem to have any connection with the extent of skill exhibited?
7. What types of dances are favorites of the physical education student?

### General Method of Procedure

The data for this experiment were secured by testing the 122 members of the first year class majoring in physical education of La Crosse (Wisconsin) State Teachers College.

First the Seashore test in rhythm was given. This was given three times to the group and the average of the three scores was used in the calculations. This was done in order to secure as valid results as possible.

For those unacquainted with the Seashore test<sup>5</sup> it may be necessary to describe it. It consists of a phonograph record which includes fifty sets of paired rhythm patterns which increase in diffi-

<sup>5</sup> Carl E. Seashore. *Measures of Musical Talent, Sense of Rhythm No. 6 A and No. 6 B.* Columbia Record 53005-D, New York: Columbia Phonograph Company.

culty. Ruch and Stoddard<sup>6</sup> have furnished the following statistics as to its reliability:  $r$  is .50,  $N$  is 58,  $S. D.$  is 7.22. No details are given as to just how these results are secured.

In testing motor rhythm, the group was divided into squads of four. These squads were judged by three judges—a musician, and two teachers of dancing. Each member of the group was rated by each judge three times: first, for precision in rhythmic movement; second, for grace in rhythmic movement; and third, for spontaneous and natural movement. Then the scores were averaged.

For the first two points, precision in rhythmic movement and grace in rhythmic movement, the following exercise was performed: a triple step-hop left and right forward in alternation with eight running steps forward. As a test for spontaneous and natural movement, the same exercise was used, except that the student was asked to substitute a movement of his own, choosing for the eight running steps.

A rating scale was set up with provision for the average dancer to receive a mark of five with a possibility of the best dancer being rated ten or ten plus, and the poorest dancer, one or one minus.

The scores made in the Seashore rhythm test, the ratings in motor rhythm estimated by the teacher as well as the school marks in physical education were compared. Replies to a questionnaire concerning experience in dancing reported the frequency of dancing, interest in dancing, training in dancing, and the favorite kind of dance of the student between the ages five to ten, ten to fifteen, and at the age of fifteen and beyond. It also reported when and where the student had begun dancing and his individual reaction or pleasure in dancing, whether very great, moderate, or very little.

#### Results of the Tests

The Seashore rhythm test scores were slightly skewed to the left, or downward. That is, a greater number of those above the median were found to lie close to the median than those below the median. This fact seemed to show that the group was somewhat above the average in rhythm discrimination.

The group showed practically no skewness when measured by the teachers' estimates in motor rhythm. It is significant that the motor rhythm estimates were found to be distributed very nearly according to the normal distribution curve. This distribution and the lack of skewness showed that they had been made carefully and scientifically. The Seashore test, being a standard test, naturally would divide an unselected group according to the normal distribution curve. A selected group would make a greater percentage of high scores.

<sup>6</sup> G. M. Ruch and G. D. Stoddard, *Tests and Measurements in High School*, (Yonkers-on-Hudson, New York: World Book Company, 1927) p. 195.

In order to determine the degree to which students made similar scores in both rhythm discrimination and motor rhythm, the Pearson product-moment formula of correlation was used. The results of the correlation follow:

$$\text{P.E. } r = .47$$

$$\text{P.E. } r = .05$$

$$\text{P.E. } r = .47 \pm .05$$

Ordinarily .47 is considered a "marked" correlation.<sup>7</sup> This would mean that the Seashore test would place twelve out of every hundred exactly in motor rhythm, while many of the remainder would be close.

However, when it is remembered that the Seashore test in rhythm itself is only given a reliability of .5, the result becomes much more significant than when that fact is not considered. When using a test of this reliability, and knowing the great variability and unreliability of teachers' judgments, one would not expect to find that a correlation between the two would be greater than .5. Therefore, in view of these facts, .47 seems to be a reasonably high correlation.

This correlation may be made slightly more clear by the following statements:

1. Of those above the third quartile in rhythm scores, only 30 per cent were found below the median in motor rhythm.
2. Only 40 per cent of the students below Q 1 in motor rhythm were above Q 1 in rhythm; only 18 per cent of the students below Q 1 in motor rhythm were above the median in rhythm discrimination.
3. Twenty-nine students were found above the third quartile (Q 3) in motor rhythm. Only six, or 20 per cent, of these were found below the first quartile (Q 1) in rhythm.

It is felt that these results show definitely the value of the Seashore rhythm test in predicting excellence in motor rhythm.

#### Comparison of These Scores With School Marks

It was at first intended to correlate the teachers' marks in physical education with the above scores. However, because of their small range and the large interval used, it was thought best merely to compare the high, average, and low marks with the high, average, and low marks of the rhythm test scores and the teachers' estimates.

Many activities involved in determining these marks were only slightly rhythmical. Therefore, it was not unexpected to find that rhythm played only a small part in determining school marks. The school marks would be an estimate of the student's ability in general physical education, while the rhythm scores would estimate his ability in dancing or in an activity akin to dancing.

<sup>7</sup> Harold O. Rugg, *Statistical Methods Applied to Education*, (Boston: Houghton Mifflin Company, 1927) p. 256.



### Results of the Questionnaire on Dancing Experience

As all the students who ranked high or low in motor rhythm did not score correspondingly high or low on the Seashore test, an effort was made to determine just what entered into the motor rhythm estimates in addition to a fine hearing of rhythm. In order to secure this information, the questionnaire method was used. The questionnaire is found in the Appendix. Some of the outstanding findings from this questionnaire follow:

#### *The Effect of Frequency on Dancing.*

As would be expected, the frequency of dancing increases with the age of the student. However, somewhat over one-half of the group, at the age of ten, had had no preparation in an activity which was to play a large part in their life work, and ten per cent reported no experience in dancing at the time of coming to college. Of the dancers in the highest quarter of motor rhythm only 24 per cent had not already danced some before the age of ten, while in the middle 50 per cent, 72 per cent had not danced, and in the lowest quarter, 66 per cent; about 40 per cent of the lowest quarter had not danced before the age of fifteen. This fact is more important when compared with the 7 per cent of the highest quarter who had not danced by this age.

The above statistics seem to furnish evidence in favor of early experience and seem at once to give reason for varying achievement in motor rhythm.

#### *Interest in Relation to Skill in Motor Rhythm.*

As in the case of the frequency of dancing reported, interest always varies according to skill in motor rhythm. This, doubtless, is as might be expected. It is particularly significant that in the lowest quarter of motor rhythm, no student remembered having much interest in dancing until after fifteen years of age. However, throughout, the interest was much greater than the amount danced. Apparently, opportunities for dancing have been less than the interest in the activity. The students seem to have been handicapped in their education, and although interested and eager to dance, had not found the opportunity.

#### *Training Versus Skill.*

Replies to item three of the questionnaire show emphatically that the group has been handicapped in training. Only one per cent have had much training by the age of ten, only five per cent by the age of fifteen, and only six per cent at the age of fifteen and beyond. Comparison of frequency of dancing and training in dancing make it evident that the training is much less than the frequency. This makes it appear still more strongly that the child himself, spurred on by his

interest, has had to make his own opportunity and that society has withheld adequate training.

The students in the highest quarter had a decided advantage in training. It is significant, however, that the students in the lowest quarter report more training than those in the middle fifty per cent. This would indicate that these students have less native capacity in motor rhythm.

The answers, nevertheless, show conclusively the close correspondence between skill and training. They show also the handicap of the student, untrained in rhythmic activity, upon entering a course for specialists in physical education.

#### *Age of Beginning Dancing Compared with Skill in Dancing.*

The fourth questionnaire item reads: "At what age was your dancing begun?"

The median age at which students began dancing is 14.39 years. Academic training is started at the age of six. It is hardly fair that this group should have delayed its special training to a median age 8.39 years later.

In this connection it may be mentioned that eleven of the group stated that they had not begun to dance at all. It was felt, however, that even the instruction given in the first year of physical education was at least a beginning. Therefore, they have been recorded as beginning at the age of nineteen, a year later than that reported by any other student.

In the teachers' estimates, two of these eleven were ranked in the middle fifty per cent, and, as might be expected, the remaining nine were ranked in the lowest quarter.

Again, it is found that the students most skilled in motor rhythm have had a considerable advantage as the students in the highest quarter began their dancing at a median age of 8.43 years. It is of significance that the student rated 8, the highest rank given in motor rhythm, began dancing at the age of five.

The median for the lowest quarter is 16.5.

#### *The Location of Beginning Dancing.*

The fifth questionnaire item is "Where was your dancing begun?"

It may seem that the school and college are doing their part when 58 per cent of the students report having danced first in those places. However, of those in the highest quarter of motor rhythm rating, only 38 per cent began dancing at school, while 48 per cent, almost one-half, had special training in dancing school, and the remainder began at home. In other words, the school failed these students in providing dancing instruction just when they needed it.

It has been shown that the best dancers began at a median age of 8.43 years. It must be that the average school, at least of ten years

ago, laid comparatively little stress upon rhythmic activity between the ages of five to ten. Since forty-eight per cent of those ranked in the highest quarter in dancing began their training in special dancing schools at their own expense, it seems reasonable to suggest it is only just that the state, in some way, recompense the instructor of physical education in later years for the extra outlay of money and training it has imposed upon him.

As would perhaps have been expected, of those in the middle 50 per cent, 72 per cent began dancing at school. Apparently, the school offered more rhythmic activity to the older pupil. However, it has been shown that the school should have supplied the opportunity at a much earlier date.

#### *Pleasure as Related to Skill in Motor Rhythm.*

The sixth questionnaire item follows: "What is your own reaction as to your pleasure in dancing?"

Very great .....

Moderate .....

Very little .....

As might be expected in a group selected as this one was, a much larger number report "very great" pleasure in dancing than "very little." About one-half, 52 per cent, report their pleasure as "moderate."

It is almost an axiom that a person enjoys most what he does best. Therefore, it is not surprising that not one person in the highest quarter reports "very little" pleasure in dancing, and that 86 per cent report "very great" pleasure.

#### *Types of Dances Preferred.*

The last item of the questionnaire is: "What kind of dance have you preferred at the ages given below?"

Five to Ten .....

Ten to Fifteen .....

Fifteen Plus .....

Full 69 per cent of the students at ages five to ten report "no preference." The waltz, however, seems to be particularly popular with the older child. Outside of those reporting "no preference" a much larger per cent selected the waltz, in both the age groups ten to fifteen and fifteen plus, than any other type of dance. It is believed that the waltz is most often taught first to a beginner in dancing. Perhaps for that reason it is easier for the average dancer, and that may account for its popularity at least to some extent. It may be inferred from such statements that any pleasurable activity may be made popular if the student becomes familiar enough with it. There may be a suggestion here to the instructor of almost any subject.

The highest quarter, throughout, seems to have had a much fuller rhythmic experience and is doing folk dancing, dancing games, gymnastic dancing, and clogging even more than social dancing.

### Summary of Conclusions

1. It is concluded that the Seashore rhythm test is a fairly satisfactory instrument for use in predicting skill in motor rhythm.
2. It also is noted that, everything else being equal, the earlier the child begins activities related to motor rhythm, the more skillful he will become as a dancer.
3. An increased frequency of dancing accompanies increased skill in dancing.
4. Interest in dancing, especially at an early age, goes hand in hand with skill in dancing.
5. The dancer must have adequate training at an early age.
6. The public school has not offered adequate opportunities for developing capacity in motor rhythm.
7. In general, the more expert dancers report a higher degree of pleasure in dancing than the less skillful dancers.
8. The most popular dance is the one best known.

### Application.

It is recommended that the Seashore rhythm test be used to supplement teachers' estimates in motor rhythm. It is equally valuable in the elementary school, high school, or junior college.

It can be used not only to determine rhythmical capacity, but also as a means of discovering aptitude for physical activities involving motor rhythm.

Especially is it valuable whenever economy of time is an object.

### APPENDIX

Questionnaire Form Filled Out by 122 Students Majoring in  
Physical Education

Name.....

Give statements as to

1. The frequency of your dancing as compared with the average of the children you know.

Ages 5-10	Ages 10-15	Ages 15 Plus
Much .....	Much .....	Much .....
Average .....	Average .....	Average .....
Little .....	Little .....	Little .....
Not Any .....	Not Any .....	Not Any .....

2. Interest in dancing.

Ages 5-10	Ages 10-15	Ages 15 Plus
Much .....	Much .....	Much .....
Average .....	Average .....	Average .....
Little .....	Little .....	Little .....
Not Any .....	Not Any .....	Not Any .....

## 3. Training in dancing.

Ages 5-10	Ages 10-15	Ages 15 Plus
Much .....	Much .....	Much .....
Average .....	Average .....	Average .....
Little .....	Little .....	Little .....
Not Any .....	Not Any .....	Not Any .....

## 4. At what age was your dancing begun?.....

## 5. Where was your dancing begun?.....

## 6. What is your own reaction to your pleasure in dancing?

Very great .....

Moderate .....

Very little .....

## 7. What kind of dance have you preferred at the ages given below?

5-10 .....

10-15 .....

15 Plus .....

## BIBLIOGRAPHY

1. J. Mace Andress, *Health Education in Rural Schools*. (Boston: Houghton Mifflin Co., 1919), p. xii-320.
2. David Kingsley Brace, *Measuring Motor Ability*. (New York: A. S. Barnes and Co., 1927), p. xvi-138.
3. Emil Jacques Dalcroze, *Rhythm, Music and Education*. (New York: G. P. Putnam's Sons, 1921), p. xiv-334.
4. C. A. Fullerton, *One Book Course in Music*. (Cedar Falls, Iowa: Fullerton & Gray, 1929), p. 254.
5. Thaddeus Giddings and Will Earhart, *Music Appreciation in the Schoolroom*. (Boston: Ginn and Co., 1928), p. 325.
6. J. T. Giles, *Manual of Physical Education for the Public Schools of Wisconsin, Part III, Folk and Singing Games*. (Madison, Wisconsin: State Department of Public Instruction, 1925), p. 90.
7. Carter V. Good, *How to Do Research in Education*. (Baltimore: Warwick and York, 1929), p. xxxvii-298.
8. C. A. Gregory and O. W. Renfrow, *Statistical Method in Education and Psychology*. (Cincinnati: C. A. Gregory Company, 1929), p. 228.
9. Truman Lee Kelley, *Interpretation of Educational Measurements*. (Yonkers-on-Hudson, New York: World Book Co., 1927), p. xiii and 363.
10. Jacob Kwalwasser, *Tests and Measurements in Music*. (Boston: C. C. Birchard & Co., 1927), p. xiii-146.
11. Jacob Kwalwasser and G. M. Ruch, *Kwalwasser-Ruch Test of Music Accomplishment*. (Iowa City: The University of Iowa, 1924), p. 8.
12. R. C. Larson, *Studies on Seashore's Measures of Musical Talent*. University of Iowa Studies, Vol. II, No. 4. (Iowa City, Iowa: University of Iowa, 1930), p. 83.
13. Louis Mohler, *Teaching Music from an Appreciative Basis*. (Boston: C. C. Birchard & Co., 1927), p. 159.
14. Raymond M. Mosher, *A Study of Group Methods of Measurement of Sight-Singing*. (New York: Teachers College, Columbia University, 1925), p. vi-75.
15. J. Pennington, *The Importance of Being Rhythmic*. (New York: G. P. Putnam's Sons, 1925), p. 142.
16. Emil Rath, "Polyrhythmic Gymnastics." *RESEARCH QUARTERLY* of the American Physical Education Association, I (March, 1930), 9-23.
17. G. M. Ruch, and G. D. Stoddard, *Tests and Measurements in High School Instruction*. (Yonkers-on-Hudson, New York: World Book Co., 1927), p. xix-381.
18. C. E. Seashore, *The Psychology of Musical Talent*. (New York: Silver, Burdett and Co., 1919), p. 288.
19. Hazel M. Stanton and Wilhelmina Koerth, *Musical Capacity Measures of Adults Repeated After Music Education*. University of Iowa Studies, No. 31. (Iowa City: The University of Iowa, 1930), p. 18.

# The Status of Physical Education for Girls in the State of Kansas

By IRMA GENE NEVINS

*Director Physical Education for Women  
State Teachers College, Pittsburg, Kansas*

THE idea of sending out a questionnaire in regard to high school physical education was conceived last spring, when Dr. Edmonson, at the National Physical Education Convention at Detroit, made the statement that very little authoritative material could be found relating to this subject. After analyzing the field and trying to determine what the major problems were, the questionnaire was written. The purpose was to ascertain the needs of physical education for girls in the State of Kansas.

This questionnaire was sent to seventy-four principals of the junior and senior high schools. The cities used were those of the first and second class rank. In very few cities of the third class size does one find any organized physical education activity. Kansas does not have a state law in regard to physical education, nor a state supervisor. Inter-school competition was purposely left out of the questionnaire. With the resolutions as passed by the North Central Association, in its meeting last spring, inter-school competition was not considered essential.

## The Questionnaire

The questionnaire is as follows:

1. Number of girls enrolled in your High School
  - a. Number taking Physical Education
  - b. Length of class periods
  - c. Organization of classes. Large or small, uneven, same size
2. Play space for girls
  - a. Indoor gymnasium
    1. Well equipped (Basketball court and basketball, volleyball net and volley balls, indoor baseballs and bat, gymnasium mats, Indian clubs, wands, piano, phonograph and records, climbing ropes, rings, horses and other apparatus, hockey sticks and balls, soccer balls, archery equipment).
    2. Moderately equipped (Basketball court and basket balls, volleyball net and volley balls, indoor base balls and bats, gymnasium mats, piano or phonograph and records).
    3. No equipment.
  - b. Outdoor play field  
Hockey-soccer field, play space, tennis courts, archery



3. Is Physical Education a part of your curriculum?
  - a. Yes; b. No; c. Elective-Compulsory; d. one, two, three, four years.
4. The High School or Junior High School Physical Education Instructor:
  - a. Hired as a Physical Education Instructor, Sex, M. or F.
  - b. Hired as an academic instructor, Sex, M. or F.
  - c. Full time instructor, Sex, M. or F.
  - d. Part time instructor, Sex, M. or F.
5. What other subjects does your High School Physical Education instructor for girls teach? a. Biology; b. History; c. English; d. Languages; e. Others—
6. Physical Education Instructor for grades:
  - a. High School Instructor, supervises.
  - b. Special Physical Education Instructor for grades.
  - c. Grade teachers have charge of Play period.
  - d. Platoon system used, Physical Education Instructor.
  - e. No play supervision in grades.
7. What qualifications should the teacher of Physical Education possess? Rank. Dependability, high scholarship, sense of humor, moral judgment, moral responsibility, co-operation, initiative, high ability in sports, ability in dancing, leadership, personality, loyalty.
8. What system do you use in grading Physical Education?
  - a. Students graded on same basis as an academic subject.
  - b. Marked passed or failed.
9. Should credit be given in Physical Education the same as in an academic subject? a. Yes; b. No.
10. Does your Physical Education Director grade:
  - a. At the end of every six weeks?
  - b. At the end of every nine weeks?
  - c. At the end of the semester?
11. Is the Physical Examination required before and after the year's work?
  - a. Yes; b. No.
12. Who gives the medical examination? Doctor? Nurse?
13. Should the teaching of Health be a major part of the Physical Education Program? a. Yes; b. No.
14. The teaching of health is accomplished through:
  - a. Discussions in Physical Education classes.
  - b. Definite class, not as a part of the Physical Education program.
15. Health instruction is given by:
  - a. Physical Education Instructor.
  - b. Special Health Instructor.
  - c. Home Economics Instructor.
  - d. Any other instructor.
16. Should Individual Gymnastics be a part of the program? a. Yes; b. No.
17. Does your Physical Education Instructor incorporate this in her program?
  - a. Yes; b. No.
18. Do you have special classes for physically handicapped girls and those excused by local physicians? a. Yes; b. No.
19. What type of work does this class consist of? a. Rest; b. Individual exercises; c. Study hall.
20. Is preparation for leisure time one of the main objectives of Physical Education in your school? a. Yes; b. No.
21. Squad groups are organized allowing for interests of participants. a. Yes; b. No.
22. Sports program includes: volleyball, basketball, hockey, tennis, archery, soccer, track, horseshoes, armory ball, list others—

23. Is every girl in school given an opportunity to belong to an intramural team? a. Yes; b. No.
24. Approximately what per cent of the girls take advantage of this opportunity? 25%—33%—50%—75%
25. Do you have a Girls' Athletic Association in your school? Yes; No.
26. Is it affiliated with the Kansas State High School Athletic Association? Yes; No.
27. Are medical examinations required of all girls playing on a team (doctor's examination)? Yes; No.
28. a. Do you have a swimming pool? Yes; No.  
b. Is Life Saving taught? Yes; No.
29. How do you interest students in swimming? Records of work kept; competition between individuals (using charts); swimming meets; other ways—
30. How is the work of the girls in the Physical Education Department brought before the public? Intramural programs; demonstrations; play days; open house; newspaper publicity.
31. Have the girls in your school attended a High School Play Day? Yes; No.
32. Do you think that the Play Day was a success? Yes; No.
33. Are you well pleased with the Physical Education program now offered in your school? Yes; No.
34. If you have any objections to Physical Education program as now taught, are they:
  - a. To the subject matter as organized?
  - b. To the present methods of instruction?
  - c. Enumerate others, and give opinion.

### Summary of Results

The summary of the questionnaire is as follows:

1. Replies were received from 62 out of 74 questionnaires sent out.
2. Discrepancies in numbers is the result of some principals failing to answer all of the questions.
3. The classes in physical education were for the most part even in size, and less than 50 in number. Ten schools reported classes over 50.
4. The average length of class period was sixty minutes.
5. There were 27 well-equipped gymnasiums; 26 were moderately well equipped; and 7, not reporting.
6. Five schools reported no out-of-door playing space. Thirty had a playing space; 26 had tennis courts; 19, hockey-soccer fields; and 6, archery ranges.
7. Ten schools reported swimming pools. Four schools used the municipal pool.
8. Every school offered physical education. Forty-five required it; 2 required 1 year; 20 required 2 years; 18 required 3 years; and 6 required 4 years.
9. Women were hired in 49 schools to direct physical education, and 26 of these taught no other subject. Subjects commonly taught were: English, 3; Biology, 9; Home Economics, 2; Social Sciences, 6; Mathematics, 3; Health, 7; Expression, 1; Commerce, 1; Vocational Guidance, 3.
10. Five schools reported a special physical education supervisor for grades. The high school instructor supervises in 11 schools; the grade teachers in 20 schools.
11. The qualifications most essential for teachers were: co-operation, initiative, leadership, personality, moral judgment, moral responsibility, loyalty, de-

pendability, high scholarship, high ability in sports, ability in dancing. (Ranked according to their importance.)

12. Grades were given on the same basis as in academic subjects in 42 schools. Twelve marked passed or failed.
13. Credit should be given as in an academic subject was the opinion of 44 principals; with emphasis on education as 6 stated.
14. Grades in physical education were given at the end of the 6 weeks in 44 schools; at the end of 9 weeks in 4; at the end of semester in 6.
15. Thirty schools require a physical examination at the beginning and end of the year's work. This is required before the year's work in twenty schools.
16. The doctor gives the medical examination in 25 schools. The nurse in 17 schools.
17. Health teaching should be a part of the physical education program was stated by 50 principals. The physical education teacher should assume the major responsibility was stated by 41 principals. 4 principals said a special teacher; 11, the Home Economics instructor; and 10, the Biology teacher.
18. Forty-one principals were in favor of corrective gymnastics. This course is taught in 34 schools. Special classes in 17 schools; 13 had rest periods; 8 sent girls to study hall.
19. Preparation for leisure time should be one of the major objectives according to 35 principals. Choice of activities through squad organizations was afforded in 42 schools.
20. Intramural teams were organized in 47 schools. Nine schools had less than 25% of the girls participating; 7 schools had between 25% and 35%; 5 schools had between 35% and 50%; and 18 schools had between 50% and 75%; one school reported 90% of the girls on intramural teams.
21. The popularity of each sport was as follows: volleyball, 53; basketball, 51; tennis, 39; armory ball, 48; track, 27; soccer, 19; horseshoes, 16; archery, 15; hockey, 12.
22. There were 33 Girls' Athletic Associations in the state. Twenty were affiliated with the Kansas State High School Athletic Association.
23. Only 17 schools required medical examinations of the girls who participated in intramural sports.
24. Girls from 32 schools have attended a high school play day, and 27 principals thought it was a success.
25. Twenty-four principals were satisfied with the program as now conducted by their physical education instructors.
26. The work of the physical education department was brought to the attention of the public by the following methods: demonstrations, 30; intramural programs, 29; newspaper publicity, 24; open house, 17; play days, 15.
27. Some of the reasons for not approving were:
  1. Crowded condition in gymnasium and locker room.
  2. No out-of-door play space.
  3. More equipment for a corrective program.
  4. School doctor should examine all the girls.
  5. Not enough opportunity to teach carry-over sports; need to have archery.
  6. Do not approve of the subject matter as taught.
  7. The present method of instruction not satisfactory.
  8. More time and help should be allowed for physical education.
  9. Too much stress put on the program.
  10. Teacher does not give enough individual attention.
  11. Need an instructor who knows how to work out a definite program.

12. Lack of time donated to program.
13. Need an instructor for girls.
14. School needs a nurse to examine all the students.

### Conclusions from the Study

The conclusions are as follows:

Physical education is a requirement in the high schools of cities over 2,000 population. The majority hire a woman to take charge of the athletic program for the girls, and for the most part she is trained in the technique of teaching physical education. This is a hopeful sign, for one of our aims is to have all high school girls under the direction of a woman who is trained in the physiological and psychological knowledge of the adolescent girl.

There was found to be a correlation between high school physical education teachers and the number of girls reporting for intramural sports. Also where there was the largest number of girls participating in sports, the instructor does not teach any academic subject. This emphasizes the need of a physical education instructor who can give all of her time and attention to the work of the department. A dissatisfaction was noted where the physical education teacher taught academic subjects besides her physical education work. Not enough emphasis was given intramural sports in this situation. Some answers to question number 34 were to the effect that there should be more teachers who were not tied down by other duties, such as in academic subjects. Another stated that not enough enthusiasm was created by the teacher because of lack of time.

In five schools, we find a physical education supervisor for the grades. The question might be asked, whether it is better to have this work taught by a special teacher or to have it done by the classroom teacher. No doubt, the classroom teacher has a better knowledge of the potentialities of the individual child. But there is the question if this same teacher will give to the play program the consideration that should be given to play. If a supervisor takes charge of this program, health examinations will be made, proper posture training will be given, and progression of exercises and games will be taught. The concomitant learnings also will be considered. This includes mental adjustments, social contacts, and moral choices. All of these are very important in a balanced play program.

The general all-round qualifications for teachers were the most important. Moral judgment and moral responsibility ranked high. As one principal stated, the physical education instructor meets the girls in a relaxed mood, and consequently has a greater influence upon their thinking. It was not considered important for the teacher to have a high scholastic ranking, nor possess unusual ability in either dancing or sports. Enthusiasm was regarded as an important factor. The

teacher through her own personality often can make a sport or dancing program an attractive feature in her school.

The answers in regard to the number of years required for physical education in high schools are not definite. This question was not stated clearly, and with all probability there was an overlapping in junior and senior high school requirements. The most interesting fact is that physical education is a part of the curriculum of every school of first and second class rank of this state.

The major emphasis in teaching of health should be in the field of physical education, according to the majority of principals. It should be an inter-related subject as one stated, but with discussions in the gymnasium classes. The teacher of health is also the teacher of physical education in three-fourths of the schools of the state of Kansas.

Throughout the state there is need of more thorough health examinations. Our program to be correct must take into consideration the individual needs of the girl. This can be determined only by a follow-up of the medical and physical examinations. Most schools have a physical examination, but do not have a medical. The medical profession needs to be interested in what we are doing. We must prove that our profession is working for the good of the individual participating. We need the help of the physician, and he needs our co-operation.

There is a growing tendency in the use of corrective physical education for the high school girls. Special consideration is given to those girls who are excused for class because of physical disabilities. The prescribing of exercises and the use of the rest period for those who are in need of it, is a hopeful sign. This proves that our program is being better adapted to the individual needs. The use of the study hall for the "physical defectives," is a thing to be deplored. Often, these people are allowed to carry a heavier schedule and need the gymnasium class period for studying. The girls who are unable to take any kind of exercises, should not be permitted to carry as heavy a schedule as those who have no physical defect. Again, co-operation is the solution. The principal or the advisor of girls, and the physical education instructor should work together, and give these girls a program which will help them with their individual needs. The teacher should to the best of her ability stimulate interest in the physical education program, and get the girls to see the advantage of rest or individual exercises.

It is pleasing to note that the use of squads seems to be the popular method of organizing classes. This allows for motivation, and girls will choose the activity in which they are interested. This form of class division will, in all probability, have a greater carry-over into leisure time. If girls choose the activity that they enjoy, it will give

them a chance to perfect the technique and they will use this in later life. When we know that only two out of every ten girls who graduate from high school have the opportunity of going to college, we realize that our possibilities are legion. A carry-over program is essential to the development of an all-round woman.

Another phase that is particularly interesting to those of us who are leaders in the field of physical education is the all important subject of credit. Forty-four principals were in favor of giving credit in physical education the same as in an academic subject. A number of educators have not been in favor of this, yet if we stress the word "education," we have as much right to credit as any other subject. We are teaching a way of life in a world that involves co-operation, we are striving to teach loyalty, sportsmanship, and those qualities of life which involve living. "Corporate Living," is the new term as used by John Dewey; we in the field of physical education are stressing this fact.



# An Analysis of the Respiratory Habits of Trained Swimmers\*

By

T. M. AYCOCK, *Michigan State College, Lansing*

L. H. GRAAFF, *Theodore Roosevelt High School, Des Moines, Ia.*

W. W. TUTTLE, *State University of Iowa*

RESPIRATION in some form is one of the most important characteristics of living things. Physical educators have been concerned with respiration only in its relationship to fatigue. They have not given special attention to the mechanics of respiration, nor have they attempted to regulate this important physiological function except in swimming and in certain track events. Since respiration is ordinarily an involuntary act, it has not presented perplexing problems. The athlete in most sports inspires according to his needs at the moment, which are regulated by the demands of the tissues of the body. Personal opinions have controlled pedagogical practices in teaching breath control in swimming, but swimming instructors can no longer ignore the fact that respiratory habits should be based on scientific principles.

Since the swimmer is placed in a most unnatural environment he can no longer rely on the involuntary respiratory mechanism of the body to furnish the proper amount of ventilation. With the exception of the back stroke, the technique requires that the respiratory phases be so synchronized with the stroke that the swimmer must inspire and expire at a definite time. The method generally practiced when the water becomes an obstacle is to inspire through the mouth when the head is lifted from the water and to expire through the nose while the face is submerged. This method came about because of the advantages resulting from the balance and position of the body in the water. Such a process makes it impossible for the involuntary respiratory mechanism to control the various phases of respiration and therefore a swimmer must rely on the voluntary control of this important function. This shift from the involuntary to the voluntary form of respiration places on the swimmer the responsibility of controlling his respiration so that he gets adequate ventilation.

At present the instructor must depend on observations to ascertain whether the individual has mastered the mechanics of the particular

\*Equal credit should be given to Mr. Aycock and Mr. Graaff for the experiment reported in this paper.

type of respiration that he has been taught. The efficiency of the respiratory habits of swimmers has been judged mainly on the basis of success in competitive swimming. At first thought this might seem to be the best criterion, since the ability to win races is, in many instances, the ultimate goal which an instructor wishes to attain. However, as this investigation shows, the observational method is inadequate for detecting respiratory habits. In fact, by mere observation it is difficult to even judge whether the swimmer is actually practicing the respiratory technique which he has been taught or whether he employs a system of his own. It is evident that a method for recording the respiratory habits of swimmers would be very useful. Before attempting to develop a technique for measuring the respiration of swimmers, an investigation of the work already completed along this line was carried out.

### Review of Literature

A survey of the literature showed very little useful information relative to the problem under consideration. Cureton<sup>1</sup> is the only one who has reported experiments dealing with the particular phase of respiration in which we are interested here. Cureton considered respiration under normal conditions, while floating in the water and while swimming the various strokes at different speeds. The data upon which he based his study were obtained by means of the pneumograph. This equipment is recognized as reliable for measuring the respiratory movements of quiet individuals, but there is evidence that it is unreliable for obtaining records of respiration while swimming strokes are being executed. It was obvious in the beginning that the records obtained by the pneumograph owed their form chiefly to the muscular movements of the swimmer. Investigation showed that the pneumograph failed to record even the phases of the respiratory cycle. In fact, without other diagnostic procedure one cannot tell where any phase begins or ends, thus making it impossible to interpret the form of the curve.

### The Technique

If we are to study the respiration of swimmers, it is obvious that a new technique must be developed. The following is a report of the results of our efforts.

*The Electro-Pneumotometric Method.* Fig. 1 shows the arrangement of the apparatus devised for measuring the respiratory phases of swimming. It consists of a flexible rubber tube G, 35 feet long which leads from one nostril of the swimmer to a tambour. Sufi-

<sup>1</sup> T. K. Cureton, "Relationship of Respiration to Speed Efficiency in Swimming," *RESEARCH QUARTERLY*, 1930, 1:54-70.

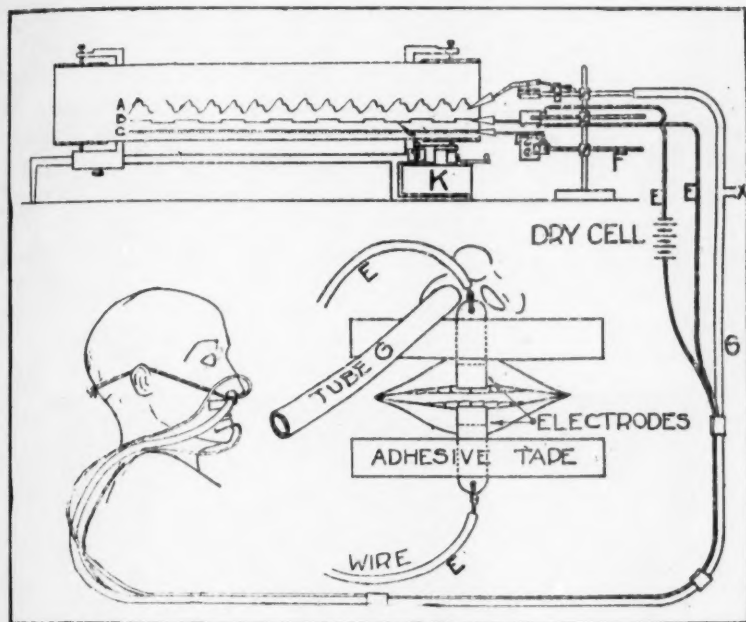


FIGURE 1.

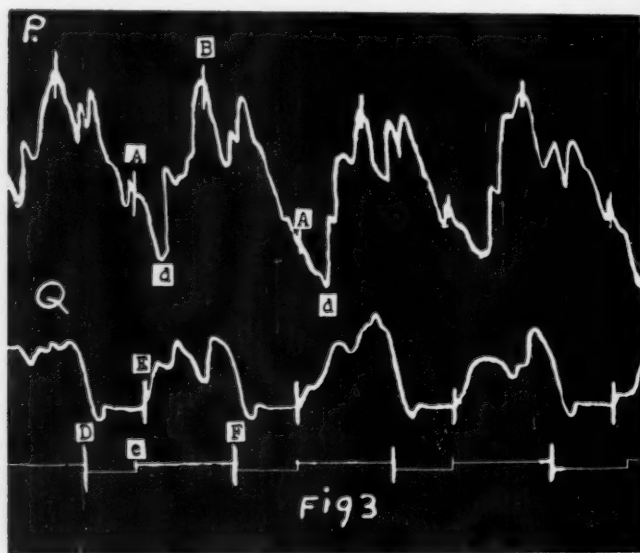
cient adhesive tape is wrapped around the end of the hose so that it fits the nostril and is air and water tight. The other nostril is unobstructed. The hose is held secure by a string tied around the head.<sup>2</sup> As the swimmer exhales, the writing point attached to the tambour moves up, making the record A on the kymograph. As long as there is pressure owing to exhaling, the writing point remains up, its position depending on the amount of pressure. At the end of expiration the writing point drops quickly, owing to the fact that the air column is open, X, Fig 1.<sup>3</sup> It is necessary to use an open air column since the force of the expirations is so great that otherwise the tambour lever is uncontrollable.

Since it is common practice among swimmers to breathe in through the mouth and out through the nose, a simple method was devised for recording the inspiratory phase. As soon as inspiration begins the mouth opens. By knowing when this occurs we have the beginning of inspiration. The duration of inspiration continues until the mouth is closed or if the mouth is not closed, until expiration starts, which is recorded by the pneumotometer.

<sup>2</sup> In later experiments a bathing cap has been devised which securely holds all of the apparatus fastened to the swimmer. This does away with adhesive tape and strings and adds much to the comfort of the subject.

<sup>3</sup> In later experiments the opening in the air column is in the tambour opposite the inlet for the air column. This was done in order to facilitate the recording of inhalation through the nose should it occur.

In order to record the beginning of the inspiratory period, U-shaped electrodes, E, Fig 1, are clamped on the lips of the swimmer. The electrodes are placed so that they make contact when the mouth is closed and break it when the mouth is opened. The electrodes are connected in a series with a dry cell and a signal magnet by insulated wires thirty-five feet long. The opening and closing of the mouth breaks and makes the current causing the signal magnet stylus to write a broken line (see the middle line in any of the figures). The point in the broken line where it drops occurs when the mouth is open to inspire. When the mouth is closed at the end of the inspiration the signal magnet pulls the stylus back to its original position. In Fig. 3, Q, a complete respiration is recorded from D to



F; D to E is inspiration and E to F is expiration. In this particular swimmer the closing of the mouth is practically simultaneous with the beginning of expiration as indicated by the pneumotometer. However, this is not always true. In case a swimmer follows expiration by holding the breath the pause is shown between e and E, Fig. 3.

The recording apparatus is supported on a ring stand so that the writing points are directly over one another. This arrangement insures the proper relationship between the various phases of the record regardless of the speed of the kymograph, which is fairly constant. (It is of utmost importance that the recording instruments be superposed at all times.) The apparatus is placed on a table conveniently by the swimming pool. The swimmer swims back

and forth across the width of the pool which is sixty feet. In order to relieve the pneumotometer and electrodes of any undue stress, the connecting hose and wires are secured around the neck of the subject.

*Measurement of the Phases.* Time is recorded in fifths of seconds by a Jaquet chronograph, F, Fig. 1. In all the figures ordinates are dropped from the pneumotometer and signal magnet records to the time record, thus setting off the time intervals.

*The Pneumograph Method.* The pneumograph is used for recording the respiratory movements of man in his natural environment. It consists of a rubber tube which encloses a spring. (There are many types but this is the most common one in use.) When this tube is secured around the chest or abdomen it lengthens or shortens according to the contraction and relaxation of the muscles involved. In this way, respiratory movements are recorded through the medium of air in a rubber hose which leads from the pneumograph to a recording tambour. The fluctuations of the closed air column are recorded on a moving surface, usually a kymograph.

The pneumograph was not discarded as an instrument for measuring the respiratory phases while swimming, until we were convinced of the impossibility of the interpretation of data thus secured. It was found impossible to determine the beginning and the end of the respiratory phases even when a number of other diagnostic methods were checked against the pneumograph records.

*The Unreliability of the Pneumograph.* It is easy to show that the pneumograph is unreliable for recording the respiratory phases of swimmers. An interpretation of the records made by it substantiates this contention. Fig. 2B is a typical record made by the pneumograph when it is placed around the thorax one inch below the nipple line. This record was made by a crawl stroke swimmer who employed breathing habits commonly used with this stroke.

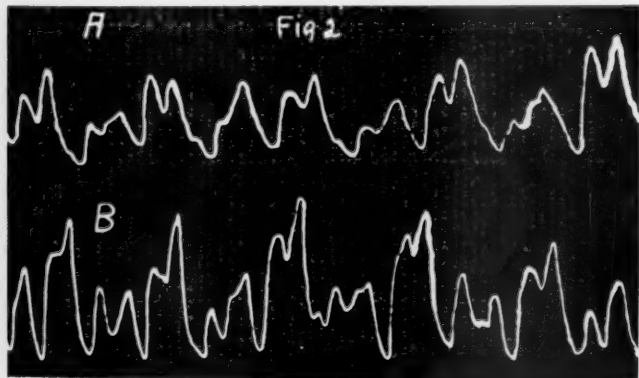


Fig. 2A is a record made by the same swimmer using the same stroke but keeping his face submerged in the water without breathing. By studying the form of these two records it is easy to detect the great degree of similarity between them. Record B seems to be nothing more than an exaggeration of record A. These records give evidence that the pneumograph is recording muscular movements and that respiration exaggerates them instead of being the determining factor in the form of the curve.

In order to throw more light on the pneumograph records, an interpretation of one of them is made on the basis of Fig. 3. This figure shows a pneumograph record, P, superposed on a record, Q, made by the electro-pneumotometric method. These records were made simultaneously by the same swimmer. On the basis of described arcs, the respiratory phases as measured by the electro-pneumotometric method are indicated on the pneumograph record. In Q, Fig. 3, inspiration lies between D and e, and expiration occurs between E and F.

On examination of the pneumograph record, P, one would naturally suppose that inspiration began at B and ended at a point marked d, where the stylus starts up. However, this is not true. Instead of ending at d, inspiration ends at A. The expiratory period begins at A and ends at B. The continuous downward movement from A to d is caused by the contraction of muscles used in the pull of the arms through the water.

Another feature introduced by the pneumograph which makes it unreliable for recording the respiratory movements during swimming is that, by changing its position on the body, records are produced which have entirely different forms. This is further evidence that the pneumograph is recording muscular movements and that the respiratory movements are submerged.

### The Data

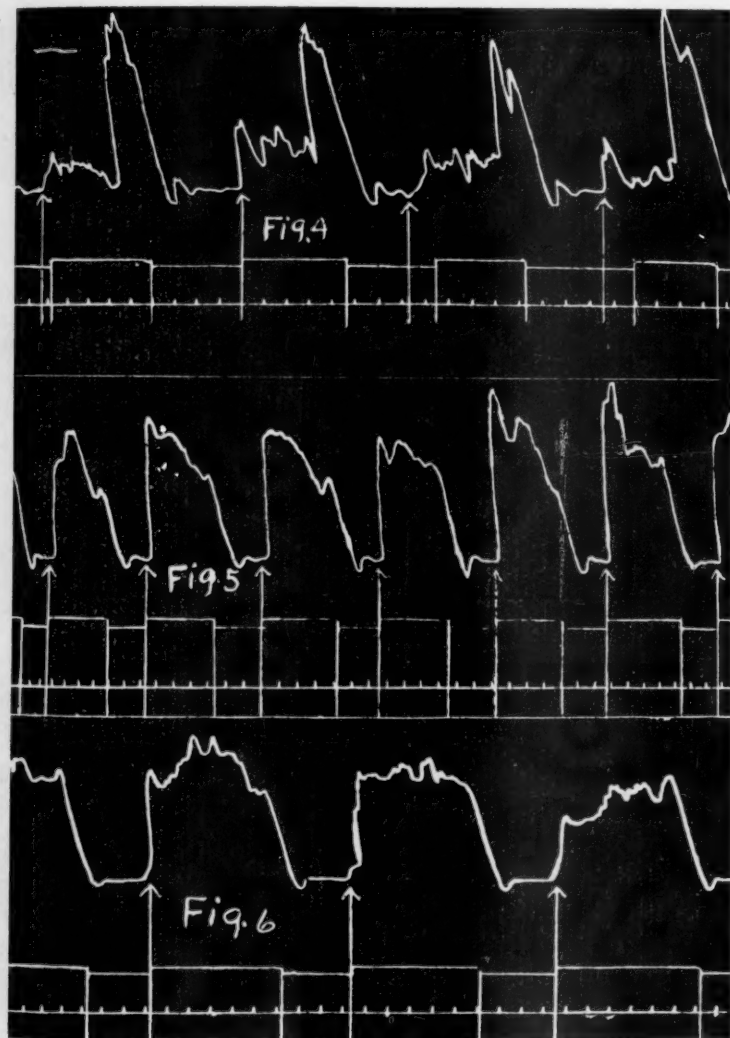
Data were collected from twenty-two swimmers who were trained on the varsity and freshmen squads at the State University of Iowa. Although the subjects were recognized as trained swimmers, there is a wide diversity in their ability. The group comprises men who are proficient in the crawl, back, breast, and side strokes. In order to make the presentation of these data clear a number of figures are presented. In each experiment approximately one hundred respirations were recorded. It was found that each swimmer gave a record which was totally characteristic of himself so that the figures presented are essentially like all the rest obtained from the swimmer in question. The data are presented on the basis of the swimming stroke employed.

*The Crawl Stroke.* Five swimmers proficient in the crawl stroke



were studied. A consideration of a typical record made by each subject brings out a number of points of interest.

Fig. 4 is a record of the respiration of subject 1 swimming at the rate of 38 strokes per minute. The form of the curve shows that he began expiration with an easy flow of air for a time and ended it with an explosion. As a rule his expiration began immediately after inspiration and before he closed his mouth. The mean respiratory time for this subject is 1.56 secs. Of this time .64 sec. is inspira-



tion and .92 sec. expiration.<sup>4</sup> He began expiration, on the average, .2 sec. before his mouth was closed.

Fig. 5 shows the type of respiration employed by subject 2 while swimming at the rate of 45 strokes per minute. The record shows that this swimmer explodes the air from his lungs immediately after inspiration, simultaneously with closing the mouth. At the end of the explosion, the pressure is gradually but quickly released. The total mean respiratory time is 1.34 secs. The mean inspiration time is .53 sec. and expiration .81 sec. The end of inspiration and the beginning of expiration are simultaneous.

Fig. 6 is also a record of subject 2. Here he is swimming at the rate of 32 strokes per minute. As before, he explodes the air immediately after inspiration. The only difference between the form of this curve and the one obtained when he was swimming at a faster rate is that he maintains his expiratory pressure longer before releasing it. Expiration begins immediately after inspiration, simultaneously with closing the mouth. The mean respiratory time is 1.88 secs. The mean inspiration is .66 sec. and expiration 1.22 secs.

Fig. 7 shows the type of respiration employed by subject 3 swimming at the rate of 32 strokes per minute. This subject holds his breath for a mean pause of .15 sec. after the end of inspiration before he begins expiration. The expiration is explosive, after which the pressure is gradually released. The mean total respiratory time is 1.98 secs. Of this time .75 sec. is devoted to inspiration and 1.08 secs. to expiration.

Fig. 8 is a record of the respiration of subject 4 swimming at the rate of 37 strokes per minute. This subject begins his expiration immediately after inspiration, simultaneously with closing his mouth. Expiration begins explosively, but ends gradually. The pressure is gradually but quickly released. The total mean respiratory period is 1.60 secs. Inspiration lasts .65 sec. and expiration .95 sec. There is no pause between inspiration and expiration.

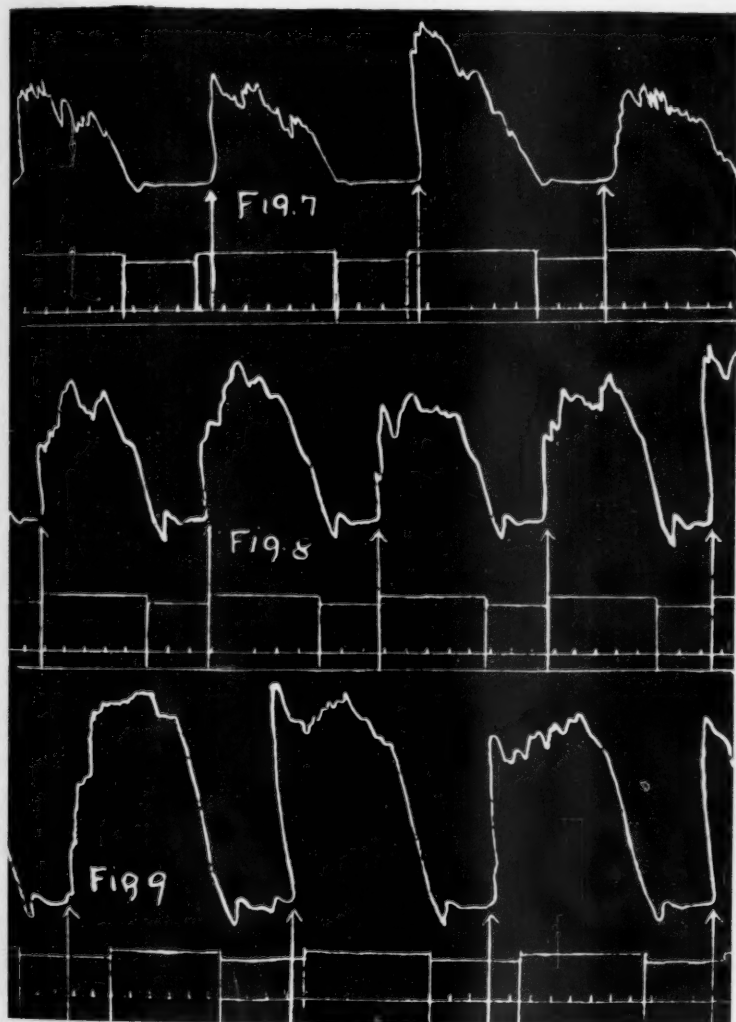
Fig. 9 shows the respiratory technique employed by subject 5 swimming at the rate of 29 strokes per minute. This subject began expiration on the average of .4 sec. before he closed his mouth. He explodes the air but maintains the pressure for some time and then quickly releases it. The mean respiratory time is 2.09 secs. Inspiration lasts .77 sec. and expiration 1.32 secs.

Fig. 10 is a record of the respiration of subject 1 swimming at the rate of 31 strokes per minute. Immediately after the completion of inspiration, expiration begins simultaneously with the closing of his mouth. The expired air is blown out at first under low pressure, followed by the explosion of the remaining air. The mean

<sup>4</sup> These figures represent the means of all the respirations recorded and therefore the phases shown in the figures may not coincide with the means.

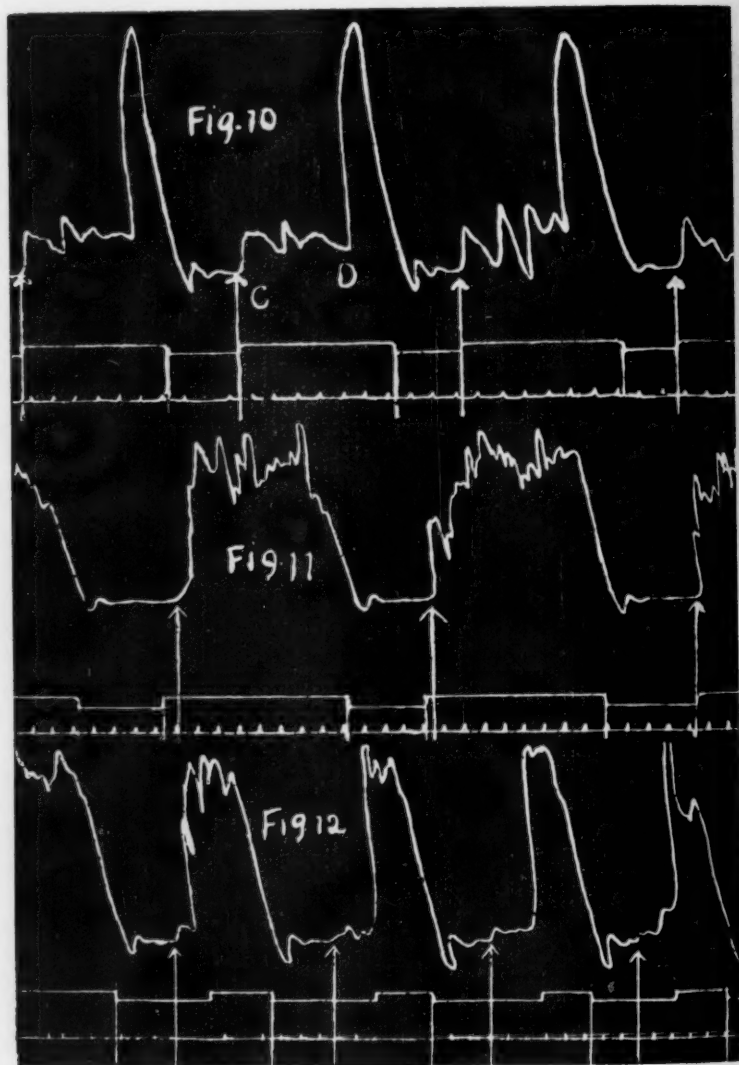
respiratory time for this subject is 1.91 secs. Inspiration consumes .50 sec. of this time and expiration 1.41 secs. There is no pause.

Fig. 11 represents the type of respiration employed by subject 4 swimming at the rate of 22 strokes per minute. About 25 per cent of the time this subject showed a pause of about .1 sec. between the end of inspiration and the beginning of expiration. In the other instances these phenomena occur at the same time. This subject explodes the air at the beginning of expiration but maintains the pressure for some time, then removes it suddenly. The mean respira-



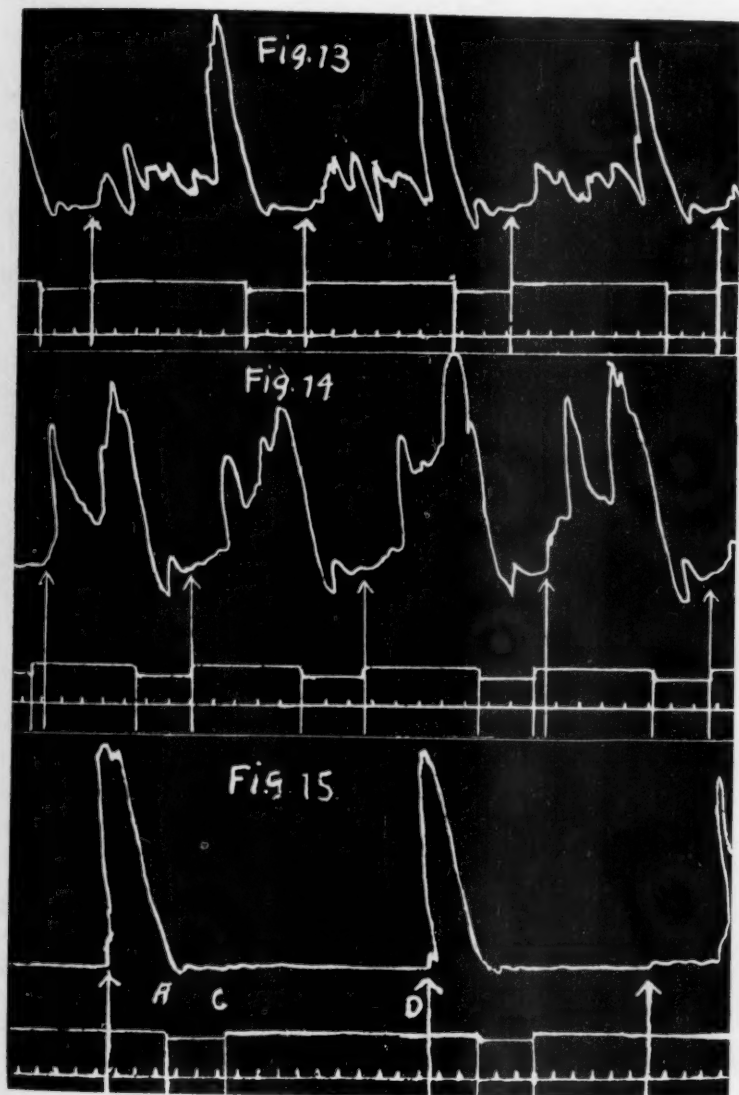
tory time is 2.43 secs. Inspiration requires .81 sec. and expiration 1.62 secs.

Fig. 12 is another record of subject 5. Here he is swimming at the rate of 35 strokes per minute. He began expiration .4 sec. before he closed his mouth. The air is exploded and then the pressure is maintained for a time, after which it is quickly released. His mean respiration is 1.69 secs. Inspiration lasts .66 sec. and expiration 1.03 secs.



*The Breast Stroke.* Five subjects who were expert breast stroke swimmers were included in the group studied. Figures representative of the group are presented.

Fig. 13 shows the respiratory technique employed by subject 1 swimming at the rate of 22 strokes per minute. The form of the curve shows that expiration began immediately after the end of inspiration, simultaneously with the closing of the mouth. At first, air



was expelled under low pressure. This occurred during the glide. Following this the remaining air was exploded. The mean respiratory time for this subject is 1.82 secs. The time devoted to inspiration is .41 sec. and to expiration 1.41 secs. There is no pause.

Fig. 14 is the record of subject 6 swimming at the rate of 40 strokes per minute. Immediately, or soon after inspiration, a small amount of air was expelled under low pressure. Following this the remaining air was expelled by two explosions. The mean respiratory time involved was 1.55 secs. Of this time .53 sec. is contributed to inspiration and .98 sec. to expiration. About 40 per cent of the time there is a pause averaging .1 sec. in duration. The remainder of the time expiration begins immediately after inspiration, simultaneously with the closing of the mouth.

Fig. 15 shows another type of respiration. This is a record of subject 7 swimming at the rate of 22 strokes per minute. This subject takes in a gulp of air (A-C) and holds it for some time, exploding it all at D. It is interesting to compare the expiration as shown in Fig. 13 with that in Fig. 15. The former subject expired a little air during the glide while the latter holds it.

*The Back Stroke.* Six swimmers were included in the group studied. Two of these were also proficient in the crawl stroke. The records which are presented are typical of the group.

Fig. 16 is the record of a back stroke swimmer, subject 8, who devoted all his time to this stroke. The point of interest brought out by this figure is that the swimmer did not coördinate his respiration with his stroke. Although the figure shows only one respiration, a number of strokes were taken during the period of the record. This lack of synchronization is explained by the fact that the back stroke swimmer has his face out of the water most of the time so that he is not hampered in this respect and is able to breathe whenever he feels the need.

Fig. 17 is a record of a back stroke swimmer, subject 9, who knows no other stroke. The same characteristics brought out in Fig. 16 are also present in this case.

Fig. 18 shows the type of respiration used by a back stroke swimmer, subject 10, who is also proficient in the crawl stroke. In this case the respirations are synchronized with the swimming stroke. Here the subject is swimming at the rate of 25 strokes per minute. The form of the curve reveals the fact that the breath is held between the end of inspiration and the beginning of expiration (D to B). At the end of the pause the air is forcibly exploded. The mean time consumed for a complete respiration is 2.40 secs. Of this time 1.20 secs. is taken up by inspiration and .60 sec. by expiration. The mean pause duration is .60 sec.

Fig. 19 is the record of a back stroke swimmer, subject 11, who



is also proficient in the crawl stroke. Here again we see a synchronization of the respiration with the stroke. As a rule, this subject holds his breath for a brief period after the end of inspiration before he begins expiration. The air is then exploded and the pressure gradually released. The rate of the stroke is 26 per minute. The mean respiratory time is 2.27 secs. Inspiration lasts 1.13 secs. and expiration .85 sec. The mean pause is .29 sec.

*The Side Stroke.* A group of six side stroke swimmers were studied in this part of the experiment. Figures representing the different types of respiration are presented.

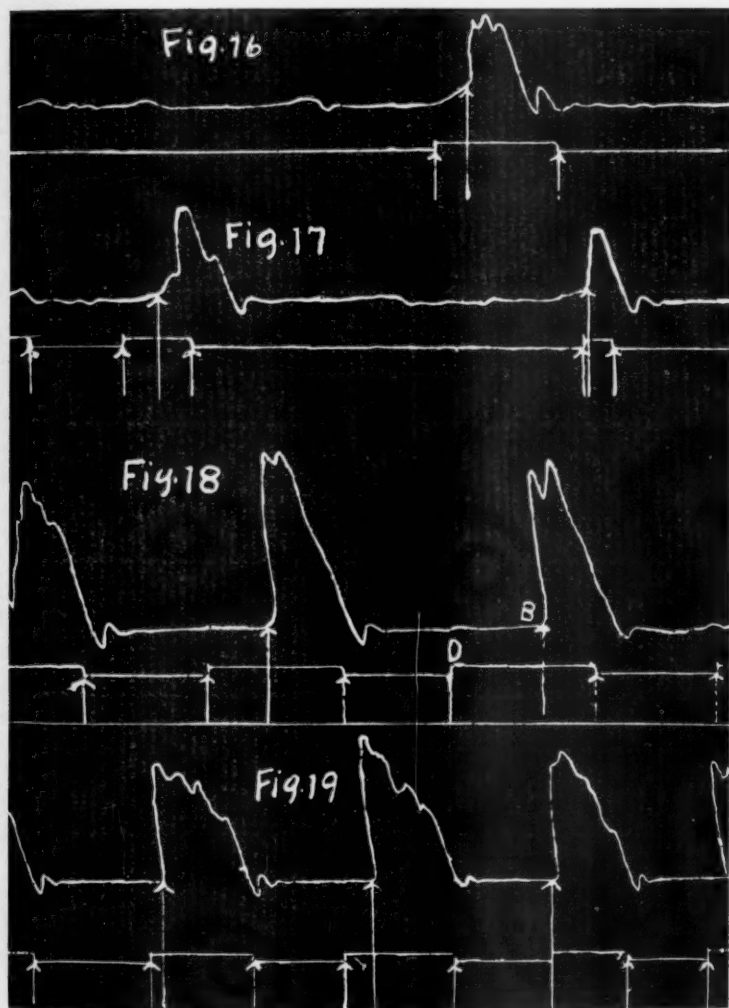
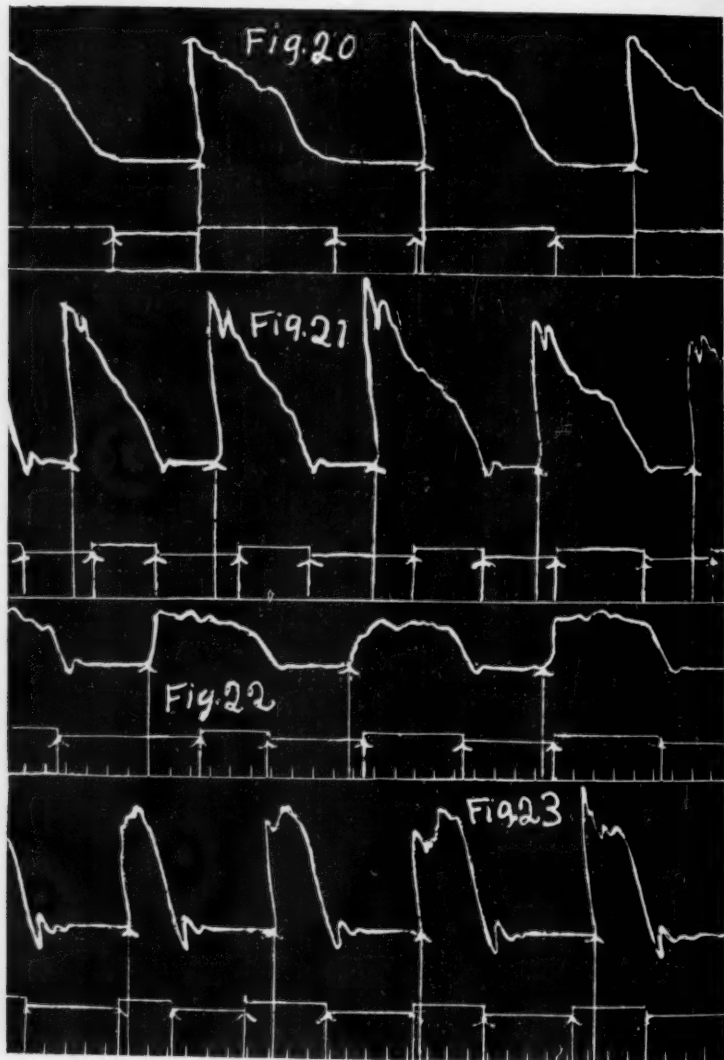


Fig. 20 shows the type of respiration employed by subject 12 swimming at the rate of 27 strokes per minute. As a rule this subject began expiration immediately following the end of inspiration and simultaneously with the closing of his mouth. In a few instances there was a very brief pause. The air was exploded and then the pressure gradually released. The mean respiratory time was 2.23 secs. Inspiration lasted .84 sec. and expiration 1.39 secs.

Fig. 21 is a record of the respiration of subject 13 swimming



at the rate of 34 strokes per minute. This individual began his expiration before the mouth was closed (mean time .30 sec.). The air was expelled by a strong explosion. After this the pressure was gradually released. The mean respiratory time was 1.76 secs. Inspiration required .62 sec. and expiration 1.14 secs.

Fig. 22 was recorded by subject 14 while swimming at the rate of 23 strokes per minute. This subject also began his expiration before his mouth was closed, mean time .25 sec. This subject expelled the air with a short, quick explosion and maintained the pressure for a time after which he gradually released it. The mean respiratory time was 2.03 secs. The mean inspiratory time was .88 sec. and expiratory time was 1.15 secs.

Fig. 23 is a record of the respiratory methods used by subject 15 swimming at the rate of 35 strokes per minute. This individual holds his breath for a time (mean .25 sec.) between the end of inspiration and the beginning of expiration, after which the air is exploded. After maintaining the pressure for a brief period it is quickly released. The mean respiratory time is 1.75 secs. Inspiration lasts .88 sec., expiration .62 sec., and pause .25 sec.

*Emergency Departures from the Normal Respiratory Technique.* There are emergencies of various kinds which arise thus causing swimmers to depart from their normal respiratory rhythm. The results of two of the most common reasons which cause these variations are presented in the following figures.

Fig. 24 is the record of the respiration of a subject swimming the crawl stroke. At (A) the respiratory passages became obstructed by water resulting in a powerful explosion of air on the part of the swimmer. His respiratory rhythm was temporarily broken up but assumed again as soon as the passages were cleared.

Fig. 25 is the record of a swimmer who encountered respiratory difficulty. At (A) he opened his mouth to expel water and at (B) he cleared the water from the respiratory passages by a terrific explosion of air. The effect which these difficulties has on the respiratory rhythm is evident from the record.

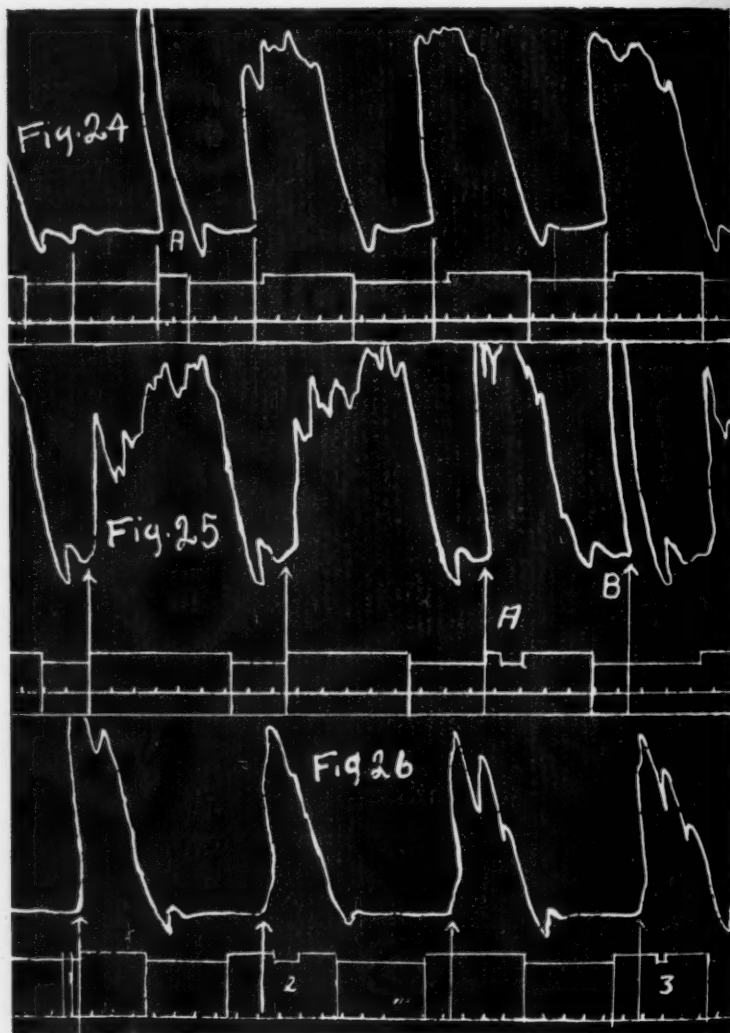
Fig. 26 shows the record of a subject who ejected water from his mouth on three different occasions. The first time (1) this occurred just before the beginning of expiration. The second (2) and third time (3) it occurred immediately after the air was exploded from the lungs.

Attention is called to these respiratory departures from normal respiratory methods for the purpose of showing the flexibility of the technique.

*Examples of Faulty Respiration.* There are many difficulties encountered in learning the technique of adequate ventilation for

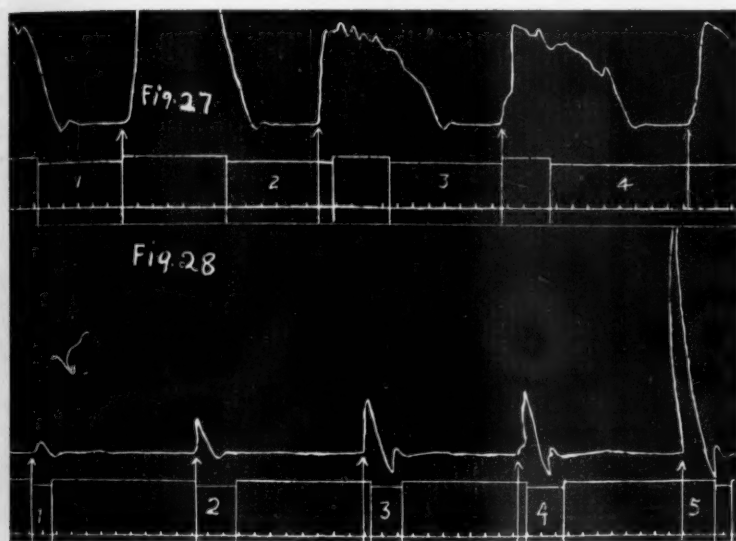
efficient swimming. Two of these difficulties are illustrated by the following figures.

Fig. 27 is the record of an individual who has fairly good mastery of the crawl stroke but who has difficulty in getting proper and sufficient ventilation. The principal fault of this swimmer is that too long a period is devoted to inspiration (1, 2, 3, and 4). The result of this technique is that the head is kept out of the water too long, causing the body to be placed in an inefficient position. The



mean respiratory time in this case is 2.30 secs. Inspiration lasts 1.40 secs. and expiration .90 sec.

Fig. 28 shows one of the common faults in the respiratory technique of swimmers. This difficulty arises from the inability of the swimmer to expel air from the lungs while the face is submerged.



This swimmer attempted to lift his head from the water and inhale and exhale during an interval entirely too short to assure adequate ventilation. The first respiration (1) shown in the figure is the second made by the subject as he swam across the pool. In the first two respirations (1 and 2) it is evident that he exhaled through his mouth with the nasal air passages open. Furthermore, it is seen that the first time he opened his mouth he expired but did not inspire. The second time (2) he expired mostly through the mouth, and then inspired quickly, the mouth being open during both events. The next respiration (3) consists of an expiration through the nose followed by a quick inspiration through the mouth. The following respiration (4) is like the preceding one. The last respiration (5) shown in the figure indicates that the previous expirations were inadequate so it consists of a powerful explosion of air through the nose followed by a quick inspiration through the mouth. Respiration 5 was a normal crawl stroke respiration. The air was expelled through the nose when submerged, none being expelled through the mouth. It is interesting to note the increase in force of the expirations as the swimmer progressed indicating the inadequacy of the respiratory efforts of this subject. This figure is an excellent illustration of the

inadequacy of respiratory technique of swimmers. It should be added that the interview with the subject following the experiment bears out the interpretation which we have put on this record.

*The Effect of the Stroke Rate on Respiration.* In this experiment the only attention paid to the rate of the stroke was to have subjects swim at a fairly slow rate and at a fast rate. It is evident from the data presented that as the speed of the stroke is increased, the duration of the expiratory pressure following the explosion of air is decreased. Otherwise the form of the expiratory curve remains unchanged. This point is illustrated by comparing Figs. 9 and 12, 5 and 6, and 4 and 10. Each pair of records was made by the same subject swimming at different rates.

It is also found that as the stroke speed is increased there is a decrease in both the inspiratory and expiratory phases. On the basis of the limited data gathered in this experiment, the greatest reduction occurs in the expiratory phase.

*Types of Respiration.* All subjects used in this investigation were taught to inhale through the mouth and to explode the air through the nose. An examination of the data reveals the fact that, although there is a general tendency toward this method, there is individual modification in each case. For this reason one can classify respiratory types only in a general way. The data which we collected seem to permit of three general classes. The first class is designated as the explosive type and includes those who expel the air by an explosion. Illustrations of this type of respiration are shown in Figs. 15, 17, and 18. The second class we have designated the prolonged type. Records of subjects employing this type of respiration are shown in Figs. 6 and 8. There is a third group which employs a combination of classes one and two. These individuals begin respiration either by a gradual expulsion of the air followed by an explosion (Figs. 4, 10, 13) or by an explosion of air followed by a maintenance of pressure over a period of time (Figs. 5, 7, 19) or by a series of explosions such as is seen in Figs. 11 and 14.

To go further into the classification of respiration of swimmers is unwarranted since individuality seems to have contributed materially to the finer points in the technique employed.

*The Consistency of Respiratory Habits Employed.* The data presented indicate that in the process of learning to swim a habit of respiration is acquired which becomes characteristic of the individual. This point is made clear by comparing Figs. 4, 10, and 13, all made by the same subject. In Fig. 4, subject 6 is swimming the crawl stroke at the rate of 38 strokes per minute, and in Fig. 10 he is swimming at the rate of 31 strokes per minute. In Fig. 13 this same subject is swimming the breast stroke at the rate of 22 strokes per



minute. By comparing other records made by the same swimmer, individual characteristics are prominent.

### Discussion

The main object of this investigation is the development of a method for studying scientifically the respiratory habits of swimmers. It is felt that a measure of success has rewarded the efforts put forth, in that information heretofore unavailable may be obtained by the technique described. The writers recognize the limitations of the technique and make no pretense of upholding the idea that it is flawless. It has already been brought to our attention that should a swimmer expire through his mouth with the nasal passage closed, our technique fails to record it. We attempted to control this objection by observation and introspection.

The time consumed in perfecting the technique prevented us from gathering an extensive mass of data. In view of the paucity of data conclusions are omitted, and in the summary the reader's attention is directed to what seems to be the outstanding points demonstrated by the investigation.

### Summary

1. A technique is described which furnishes a means of recording the respiratory methods employed by swimmers.
2. The group studied in this investigation seems to fall into three classes regardless of the stroke used, viz., the explosive type, the prolonged type and a combination of the two.
3. When the stroke rate is increased, the respiratory curve shows a decrease in maintained expiratory pressure. Both the inspiratory and expiratory phases are shortened, the expiratory phase suffering the greatest change.
4. The time devoted to both inspiration and expiration is an individual matter as are the finer points of the method employed. With the limited data presented, it is not possible to establish a standard ratio between inspiration and expiration, although usually inspiration is shorter than expiration.
5. In all strokes except the back crawl, respiration is synchronized with the stroke in a one-to-one ratio. This is also true of the back crawl where the individual was proficient in the crawl. Where the back stroke alone had been mastered there is a lack of synchronization and the swimmers obtain air whenever they feel the need of it.
6. The respiratory technique learned in swimming becomes an individual characteristic.
7. The technique described also proved capable of pointing out faulty respiration as well as showing some of the emergency practices in the respiration of swimmers.

# Administrative Problems in Required Physical Education for Men in Universities

By H. HARRISON CLARKE  
*Teachers College, Syracuse University*

THE following article is the result of a study made by the author during the academic year of 1930-1931. The purpose of this article is to point out certain pertinent administrative problems in required physical education for men in universities, and to make certain suggestions concerning them.

The basis for this study was the personal visitation by the author to six Eastern universities<sup>1</sup> between March 2 and 20, 1931, in which their programs of required physical education were studied. With this as a basis, followed by a study from as many published sources as could be found on the subject, a tentative program was established.

The final procedure used was to evaluate the conclusions reached. Two or more alternatives for each phase of the study were presented for evaluation to seventeen men chosen as outstanding authorities on college and university physical education. Of this group, eleven returned their questionnaires.<sup>2</sup>

## Military Training and the Required Physical Education Curriculum

The adjustment between military training and the required physical education curriculum varies in the six universities studied. At Cornell and the University Heights School at New York University, military training in the form of the Reserve Officers' Training Corps is required of all men in place of physical education. The only men required to take physical education at these two universities are aliens, physical defectives, and conscientious objectors, as these are exempt from military training.

The Reserve Officers' Training Corps is non-existent at the University of Rochester, Columbia, and the Washington Square School at New York University. The universities of Syracuse and Pennsylvania allow it as an elective substitute for physical education.

<sup>1</sup> The universities visited were as follows: Columbia University, New York City; Cornell University, Ithaca, New York; New York University, New York City; University of Pennsylvania, Philadelphia, Pennsylvania; University of Rochester, Rochester, New York; and Syracuse University, Syracuse, New York.

<sup>2</sup> The names of these experts are withheld from publication, but will be supplied to individuals requesting them.

The practice of presenting military training to men in universities either as a required or elective substitute for physical education is a questionable practice, and may be questioned because:

1. Of the thirty physical education activities included in the report of the Committee on Curriculum Research of the Society of the Directors of Physical Education in Colleges, marching and tactics were ranked the lowest in all-around development.<sup>3</sup>

2. The student's future life is not enriched with leisure-time activities.<sup>4</sup>

3. Marching and tactics are low in social values<sup>5</sup> and safety skills.<sup>6</sup>

4. An agency outside of the university, namely, the United States Government, is assisting in educating students for whom the university is responsible.<sup>7</sup>

In order to determine a desirable adjustment between military training and the required physical education curriculum, the problem was presented to the "group of physical education experts" for evaluation. The experts went on record as unanimously opposing military training as a substitute for physical education.

On the basis of this study, it is concluded that military training is deemed inadvisable as a substitute for physical education.

### Intercollegiate Athletics and the Required Physical Education Curriculum

It is a common practice in many universities to allow men to elect intercollegiate athletics in place of attendance at regular physical education classes for the length of time they are candidates for the sport. In five of the universities studied this is true of all men who are members of freshmen or varsity intercollegiate squads. This practice is questionable for the following reasons:

1. The student may not be receiving instruction in a wide range of physical education activities.
2. In many cases, students on intercollegiate teams do not gain a knowledge and skill in activities which will benefit them for a leisure-time use either as a student or as an alumnus.
3. The individual's range of knowledge in his specialized sport may be limited. An example of this would be running the quarter-mile in track.<sup>8</sup>

<sup>3</sup> Report of the Committee on Curriculum Research. *Proceedings of the Society of the Directors of Physical Education in Colleges* (December 31, 1929), p. 28-29.

<sup>4</sup> *Ibid.*, p. 26, 28.

<sup>5</sup> *Ibid.*, p. 23-24.

<sup>6</sup> *Ibid.*, p. 25-26.

<sup>7</sup> J. F. Williams and W. L. Hughes, *Athletics in Education* (Philadelphia: W. B. Saunders Company, 1930), p. 71-72.

<sup>8</sup> S. C. Staley, "The Four-Year Curriculum in Physical (Sports) Education." *Proceedings of the Society of Directors of Physical Education in Colleges*. (December 29-30, 1930), p. 86.

4. Those who have specialized aptitudes are given the bulk of instruction.<sup>9</sup>

Dr. Edwin Fauver of the University of Rochester requires all freshmen who go out for intercollegiate teams during the winter to participate in the required physical education program. Williams and Hughes suggest that all such students be encouraged or required to learn at least two carry-over sports.<sup>10</sup>

In order to determine a desirable adjustment between intercollegiate athletics and the required physical education curriculum for men in universities, four alternatives were presented to the "group of physical education experts" for evaluation. The results of the evaluation show that the majority of experts favor the plan which requires intercollegiate candidates to gain a reasonable proficiency in at least two sports which are valuable for leisure-time use.

On the basis of this study, it is concluded that intercollegiate athletic candidates should be required to gain a reasonable proficiency in at least two sports which are valuable for leisure-time use.

#### Reporting Practice Attendance of Intercollegiate Athletic Candidates

As the physical education department is responsible for reporting grades and credit in required physical education for students engaged in intercollegiate athletics, an administrative problem is encountered in a proper check of those students. At all of the six universities studied, except one, the attendance report of intercollegiate athletic candidates is made at the gymnasium office at a designated time each week. A difference of opinion exists among the six universities studied as to whether the coach or the student manager of each sport should certify the attendance lists. In order to determine the individual to certify these lists, alternatives were presented to the "group of physical education experts" for evaluation. The results of the evaluation show that six experts favor certification by the coaches of each sport.

On the basis of this study, it is concluded that attendance lists of intercollegiate candidates desiring credit in physical education should be filed in the gymnasium office at a designated time each week, accompanied by the signature of the coach.

#### Registration of Students for Required Physical Education Classes

An administrative problem encountered by departments of physical education for men in universities is the assigning of men with orthopedic defects to corrective classes at the time of registration.

<sup>9</sup> S. C. Staley, *Ibid.*, p. 86.

<sup>10</sup> J. F. Williams and W. L. Hughes, *op.cit.*, p. 112.

It would seem advisable to require every student registering for required physical education classes to present a card from the authorities in charge of the physical and medical examinations, which would either state his ability to participate in the required program or else consign him to a corrective class. In order to determine if this plan is good procedure, the "group of physical education experts" were asked if they favored the following statement:

"Students registering for required physical education classes shall present a card from the authorities in charge of the physical and medical examinations stating their fitness to participate in the physical education program, or else consigning them to a corrective class."

The results of the evaluation show that seven experts marked their questionnaires as favoring the statement. It may thus be concluded that on the basis of this study it is good procedure.

During the past fall, the above plan was tried at Syracuse University. All students were required to take their physical and medical examinations before registering for their university work. As each student finished his examination, he was given a card to present when registering for physical education. This card was made out in code to facilitate handling, and gave his orthopedic rating. When registering for physical education, this card immediately placed him in a class according to his physical condition. Thus at the end of the registration period, all classes, including the corrective classes, were made up.

The card used and the code follow:

*Card*

---

To the Physical Education Sectioning Committee:

This is to certify that

Mr. .... has received  
his physical examination and is recommended for Section: .....  
Date: .....

.....  
For the Student Health Committee

---

*Code*

---

PE Regular physical education class.	C-1 Feet
R-1 Heart	C-2 Underweight
R-2 Post-infantile deformity	C-3 Low physical fitness
R-3 Other deformities	C-4 Obese
R-4 Ankylosed joints	C-5 Kyphosis
R-5 Nervous disorders	C-6 Kypho-lordosis
R-6 Hernia	C-7 Scoliosis, postural
R or C Defects not included above	C-8 Scoliosis, structural
	C-9 Lordosis

---

This plan proved very satisfactory and is a distinct improvement over past procedures. It will become a regular registration feature at Syracuse University in the future.

### Conclusions

The following conclusions may be listed based on the study herein described:

1. Military training should not be allowed as a substitute for physical education for men in universities.
2. Intercollegiate athletic candidates should be required to gain a reasonable proficiency in at least two sports which are valuable for leisure-time use.
3. Attendance lists of intercollegiate athletic candidates desiring credit in physical education should be filed in the gymnasium office at a designated time each week, accompanied by the signature of the coach.
4. Students registering for required physical education classes should present a card from the authorities in charge of the physical and medical examinations, stating their fitness to participate in the physical education program, or else consigning them to a corrective class.



# A Comparison of Certain Physical Developments of Freshman Athletes and Non-Athletes

AN EXPERIMENT BASED ON CERTAIN  
ANTHROPOMETRIC MEASUREMENTS ADMINISTERED  
AT THE PENNSYLVANIA STATE COLLEGE, 1930-1931

By KUHRT WIENEKE

*Instructor—School of Physical Education and Athletics,  
The Pennsylvania State College*

## The Problem

The purpose of this experiment is to compare the physical development of freshmen athletes and non-athletes during a one-year period.

## Basis for Determining Athletes and Non-Athletes

The difference between athletes and non-athletes was based on participation, or non-participation, in freshman athletics. Those men who were squad members of some freshman varsity athletic team throughout the school year were classed as athletes, while those men who did not participate in freshman varsity athletics and who were registered only in the required physical education classes were designated non-athletes.<sup>1</sup>

## Procedure

All members of the freshman class were given a physical examination during Freshman Week in the fall. The results were recorded and filed. In the spring of the year the same tests were again given to those members of the freshman class who were members of the required physical education classes (classed as non-athletes). In addition to this group of students, the writer selected another group of freshmen who had been members of some freshman varsity athletic team during the school year and administered the same physical examination that had been given to the non-athletes. Records were then completed for approximately 81 athletes and 81 non-athletes for fall and spring.

<sup>1</sup> Members of freshman athletic squads are not required to enter the regularly scheduled classes in physical education. All others are required to attend class two periods per week throughout the school year.

### Measurements Employed

The following pieces of apparatus were used in conducting the experiment: First, a Manuometer, to determine the strength of both right and left grips; second, a Dynamometer, to measure back and leg strength; and third, a Wet Spirometer, to measure vital (lung) capacity.

### Methods of Pairing Athletes and Non-Athletes

In the selection of pairs of subjects, the following criteria were set up: First, each athlete was paired with a non-athlete, based on the identical physical tests given in the fall. Second, in pairing, the respective scores of the athletes in the fall were identical with the scores of the non-athletes in all four measurements, with the exception of a very few cases where a deviation of five score points was allowed.

### Findings

The two groups of athletes and non-athletes were compared in each of the four measurements by the same method. First, the Standard Deviation of the Differences in the paired Gains was determined by use of the following formula:

$$\sigma = \sqrt{\frac{\sum X^2}{N} - \left(\frac{\sum X}{N}\right)^2}$$

Second, the Standard Error of the Mean of the Differences between the paired Gains was computed:

$$\epsilon mdg = \frac{\sigma dg}{\sqrt{n}}$$

This has been proved to be identical in value with the Standard Error of the Difference between the means of the two sets of Gains with the element of correlation considered.<sup>2</sup>

Third, the Mean was obtained by dividing the number of cases into the summation of the Difference in the Gains:

$$M = \frac{\sum X}{N}$$

The following tables will concretely show the method of pairing the athletes with the non-athletes, together with their respective scores in the four measurements in the fall and spring; Table I shows a comparison based on Grip Left, Table II a comparison based on the measurement of Grip Right, Table III a comparison based on Back and Leg Strength, and Table IV a comparison based

<sup>2</sup> Peters, C. C. Mimeographed Class Notes, Pennsylvania State College.

on the measurement of Lung Capacity. In the first column, headed "Fall," the initial scores of athletes and non-athletes are tabulated; in the second column, headed "Spring," the respective scores of the athletes and non-athletes after nine months' activity are tabulated; in the third column, headed "Gain," the amount of improvement is designated; in the fourth column, headed "Difference in Gain," the scores marked with a minus sign (—) favor the non-athletes while those scores that are unmarked favor the athletes. Conclusions are drawn in connection with each table of scores.

TABLE I

A COMPARISON OF 81 PENN STATE FRESHMAN ATHLETES AND 81 NON-ATHLETES BASED ON A MEASUREMENT OF GRIP LEFT

Athletes			Non-Athletes			Difference in Gain
Fall	Spring	Gain	Fall	Spring	Gain	
70	100	30	70	80	10	20
70	85	15	70	70	0	15
70	80	10	70	100	30	—20
75	90	15	75	80	5	10
70	105	35	70	80	10	25
70	75	5	70	90	20	—15
70	85	15	70	75	5	10
70	95	25	70	90	20	5
80	105	25	80	90	10	15
80	95	15	80	80	0	15
80	105	25	80	95	15	10
80	100	20	80	100	20	0
80	90	10	80	90	10	0
80	110	30	80	80	0	30
80	80	0	80	80	0	0
80	95	15	80	85	5	10
80	100	20	80	90	10	10
80	80	0	80	70	—10	10
80	100	20	80	80	0	20
80	95	15	80	90	10	5
85	90	5	85	85	0	5
85	110	25	85	85	0	25
85	100	15	85	90	5	10
85	105	20	85	90	5	15
85	90	5	85	110	25	—20
90	90	0	85	95	10	—10
90	95	5	85	85	0	5
90	90	0	85	100	15	—15
90	115	25	90	95	5	20
90	105	15	90	90	0	15
90	90	0	90	90	0	0
90	100	10	90	90	0	10
90	100	10	90	100	10	0
90	110	20	90	105	15	5

TABLE I (Continued)

Athletes			Non-Athletes			Difference in Gain	
Fall	Spring	Gain	Fall	Spring	Gain		
90	100	10	90	95	5	5	
90	110	20	90	95	5	15	
90	105	15	90	100	10	5	
90	100	10	90	105	15	-5	
90	100	10	90	90	0	10	
90	100	10	90	100	10	0	
90	90	0	90	100	10	-10	
95	110	15	95	100	5	10	
95	100	5	95	95	0	5	
95	130	35	95	110	15	20	
95	105	10	95	105	10	0	
95	100	5	95	90	-5	10	
95	95	0	95	110	10	-10	
95	100	5	95	95	0	5	
100	115	15	100	110	10	5	
100	90	-10	100	100	0	-10	
100	125	25	100	100	0	25	
100	110	10	100	100	0	10	
100	100	0	100	100	0	0	
100	110	10	100	110	10	0	
100	130	30	100	105	5	25	
100	105	5	100	100	0	5	
100	100	0	100	115	15	-15	
100	105	5	100	100	0	5	
100	100	0	100	100	0	0	
100	110	10	100	110	10	0	
100	105	5	100	100	0	5	
100	110	10	100	100	0	10	
100	105	5	100	100	0	5	
105	105	0	105	110	5	-5	
105	110	5	105	105	0	5	
105	130	25	105	110	5	20	
105	120	15	105	105	0	15	
110	110	0	110	110	0	0	
110	120	10	110	115	5	5	
110	120	10	110	115	5	5	
110	110	0	110	110	0	0	
110	120	10	110	110	0	10	
110	115	5	110	115	5	0	
115	120	5	115	115	0	5	
115	120	5	115	115	0	5	
115	115	0	115	120	5	-5	
115	115	0	115	115	0	0	
115	115	0	115	115	0	0	
120	120	0	120	120	0	0	
120	130	10	120	120	0	10	
120	120	0	125	125	0	0	
Means		10.74				5.37	5.37

The following detailed statistical procedure was used in the interpretation of each of the four tables. First, the Standard Deviation of the Differences in the gains of the athletes and non-athletes was found by means of the following formula:

$$\sigma = \sqrt{\frac{\sum X^2}{N} - \left(\frac{\sum X}{N}\right)^2}$$

The result in this case equals 10.31. Then the formula for finding the Standard Error of the Difference between the Means of the Gains was used:

$$emd_g = \frac{\sigma dg}{\sqrt{n}}$$

The result in this case equals 1.16. The Mean was determined as follows:

$$M = \frac{\sum X}{N}$$

The result here equals 5.37.

By dividing the Mean (5.37) by the Standard Error of the Mean Difference of the Gains (1.16) the result equals 4.62. Thus, the ratio of the difference of the means to the Standard Deviation of this difference is 4.62 which indicates 99.99 chances out of 100 against reversal of the difference with further experimentation. Therefore, it is a practical certainty that if these subjects are representative, athletes exceed non-athletes in Grip Left.

In Table II, A Comparison Based on a Measurement of Grip Right, similar results were obtained in favor of the athletes.

TABLE II  
A COMPARISON OF 81 PENN STATE FRESHMAN ATHLETES AND 81 NON-  
ATHLETES BASED ON A MEASUREMENT OF GRIP RIGHT

Athletes			Non-Athletes			Difference in Gain
Fall	Spring	Gain	Fall	Spring	Gain	
70	90	20	70	90	20	0
75	95	20	80	80	0	20
80	80	0	80	90	10	-10
80	110	30	80	100	20	10
80	110	30	80	100	20	10
80	100	20	80	80	0	20
80	110	30	80	80	0	30
80	90	10	80	100	20	-10
85	110	25	85	90	5	20
85	85	0	85	100	15	-15
90	100	10	90	100	10	0
90	110	20	90	100	10	10
90	105	15	90	100	10	5
90	100	10	90	100	10	0
90	110	20	90	100	10	10
90	120	30	90	90	0	30
90	110	20	90	110	20	0
90	110	20	90	110	20	0
90	100	10	90	115	25	-15
90	100	10	90	115	25	-15
90	100	10	90	100	10	0
90	90	0	90	100	10	-10
95	120	25	95	105	10	15
95	110	15	95	105	10	5
95	95	0	95	100	5	-5
100	105	5	95	100	5	0
100	110	10	95	95	0	10
100	120	20	95	100	5	15
100	110	10	95	95	0	10
100	100	0	100	110	10	-10
100	120	20	100	110	10	10
100	110	10	100	100	0	10
100	100	0	100	105	5	-5
100	125	25	100	100	0	25
100	110	10	100	100	0	10
100	110	10	100	100	0	10
100	110	10	100	115	15	-5
100	115	15	100	115	15	0
100	105	5	100	110	10	-5
100	110	10	100	110	10	0
100	110	10	100	100	0	10
100	110	10	100	100	0	10
105	110	5	105	105	0	5
105	110	5	105	105	0	5
105	110	5	105	120	15	-10
105	130	25	105	105	0	25
105	135	30	105	110	5	25



TABLE II (Continued)

Athletes			Non-Athletes			Difference in Gain
Fall	Spring	Gain	Fall	Spring	Gain	
105	105	0	105	110	5	-5
105	105	0	105	105	0	0
105	110	5	105	110	5	0
110	115	5	110	115	5	0
110	115	5	110	110	0	5
110	110	0	110	120	10	-10
110	110	0	110	110	0	0
110	120	20	110	110	0	20
110	110	0	110	110	0	0
110	110	0	110	110	0	0
110	140	30	110	110	0	30
110	130	20	110	110	0	20
110	120	10	110	110	0	10
110	110	0	110	110	0	0
110	110	0	110	120	10	-10
115	115	0	115	120	5	-5
115	120	5	115	115	0	5
115	115	0	115	115	0	0
115	125	10	115	120	5	5
120	125	5	115	125	10	-5
120	120	0	115	115	0	0
120	120	0	120	120	0	0
120	120	0	120	120	0	0
120	130	10	120	120	0	10
120	125	5	120	130	10	-5
120	120	0	120	120	0	0
120	140	20	125	125	0	20
120	135	15	125	130	5	10
120	120	0	125	125	0	0
120	125	5	125	130	5	0
120	120	0	125	130	5	-5
130	130	0	130	130	0	0
130	130	0	130	130	0	0
130	130	0	130	135	5	-5
Means						4.13
						5.99
						10.12

Using the same statistical procedure as that for Grip Left, comparable results were obtained. Here, the ratio of the difference of the means to the Standard Deviation of that difference is 3.4 which includes 99.96 cases out of 100, making it a practical certainty that if these subjects are representative, athletes excel non-athletes in Grip Right.

In Table III, A Comparison Based on a Measurement of Back and Leg Strength, the results are even more in favor of the athletes.

TABLE III

A COMPARISON OF 81 PENN STATE FRESHMEN ATHLETES AND NON-ATHLETES  
BASED ON A MEASUREMENT OF BACK AND LEG STRENGTH

Athletes			Non-Athletes			Difference in Gain
Fall	Spring	Gain	Fall	Spring	Gain	
155	165	10	160	160	0	10
160	170	10	160	165	5	5
160	160	0	160	160	0	0
160	160	0	160	160	0	0
160	165	5	160	165	5	0
160	165	5	160	160	0	5
160	165	5	160	165	5	0
160	165	5	160	160	0	5
165	195	30	165	165	0	30
165	165	0	165	215	50	-50
165	165	0	165	165	0	0
165	170	5	165	170	5	0
170	190	20	170	170	0	20
165	170	5	165	165	0	5
165	170	5	165	165	0	5
165	175	10	165	165	0	10
175	240	65	175	175	0	65
180	180	0	180	180	0	0
185	185	0	180	200	20	-20
190	190	0	190	190	0	0
190	190	0	190	190	0	0
190	210	20	190	190	0	20
190	200	10	195	195	0	10
200	210	10	200	205	5	5
205	210	5	205	205	0	5
220	220	0	220	280	60	-60
80	120	40	80	100	20	20
85	185	90	85	90	5	85
80	90	10	85	125	40	-30
90	100	10	90	95	5	5
95	135	40	95	120	25	15
95	110	15	95	120	25	-10
100	165	65	100	100	0	65
100	135	35	100	160	60	-25
105	130	25	100	115	15	10
105	135	30	105	125	20	10
105	170	65	110	115	5	60
115	125	10	115	115	0	10
115	150	35	115	130	15	20
115	130	15	115	120	5	10
115	205	90	115	115	0	90
115	180	65	115	165	50	15
110	165	55	115	125	10	45
110	145	35	115	150	35	0
120	175	55	120	180	60	-5
120	145	25	120	120	0	25
120	170	50	120	125	5	45

TABLE III (Continued)

Athletes			Non-Athletes			Difference in Gain	
Fall	Spring	Gain	Fall	Spring	Gain		
120	120	0	120	120	0	0	
120	165	45	120	160	40	5	
120	130	10	120	120	0	10	
120	140	20	120	170	50	—30	
120	135	15	120	165	45	—30	
125	160	35	125	130	5	30	
125	165	40	125	165	0	0	
125	135	10	125	135	10	0	
130	185	55	125	160	35	20	
130	135	5	125	125	0	5	
130	210	80	130	130	0	80	
130	190	60	130	160	30	30	
130	160	30	130	130	0	30	
130	140	10	130	130	0	10	
130	150	20	130	135	5	15	
130	130	0	130	140	10	—10	
130	140	10	130	130	0	10	
130	140	10	130	130	0	10	
130	160	30	130	130	0	30	
130	225	95	130	130	0	95	
130	150	20	130	150	20	0	
135	260	125	130	135	5	120	
135	150	15	135	135	0	15	
135	195	60	135	135	0	60	
140	225	85	135	175	40	45	
140	145	5	135	135	0	5	
140	145	5	135	135	0	5	
140	150	10	135	140	5	5	
140	150	10	140	155	15	—5	
140	150	10	140	140	0	10	
145	150	5	140	160	20	—15	
150	225	75	145	145	0	75	
150	160	10	150	150	0	10	
145	155	10	150	150	0	10	
Means		25.12				11.48	13.64

The results here are even more significant than in the comparison of Grip Left and Grip Right. The ratio of the difference of the means to the Standard Deviation of the difference of the two means is 4.12 which includes 99.99 cases out of 100. Thus again, it is a practical certainty that if these subjects are representative, athletes exceed non-athletes in Back and Leg strength.

In Table IV, A Comparison Based on a Measurement of Lung Capacity, the results are less significantly in favor of the athletes.

TABLE IV

A COMPARISON OF 71 PENN STATE FRESHMEN ATHLETES AND 71 NON-ATHLETES  
BASED ON A MEASUREMENT OF LUNG CAPACITY

Athletes			Non-Athletes			Difference in Gain
Fall	Spring	Gain	Fall	Spring	Gain	
200	220	20	200	260	60	-40
200	200	0	200	200	0	0
210	230	20	210	260	50	-30
210	210	0	210	220	10	-10
210	230	20	210	220	10	10
210	215	5	210	230	20	-15
210	240	30	210	210	0	30
220	220	0	220	235	15	-15
220	220	0	220	220	0	0
225	240	15	220	220	0	15
225	240	15	225	225	0	15
225	240	15	225	225	0	15
230	240	10	230	235	5	5
230	245	15	230	240	10	5
230	255	25	230	240	10	15
230	250	20	230	230	0	20
235	245	10	230	250	20	-10
235	270	35	230	235	5	30
235	250	15	235	245	10	5
235	240	5	235	250	15	-10
240	240	0	240	240	0	0
240	240	0	240	250	10	-10
240	240	0	240	240	0	0
240	250	10	240	260	20	-10
240	250	10	240	240	0	10
245	245	0	240	240	0	0
245	250	5	240	270	30	-25
245	245	0	240	250	10	-10
250	250	0	250	270	20	-20
250	250	0	250	260	10	-10
250	255	5	250	265	15	-10
250	250	0	250	260	10	-10
250	255	5	250	260	10	-5
255	280	25	250	255	5	20
260	280	20	260	280	20	0
260	260	0	260	265	5	-5
260	260	0	260	275	15	-15
260	290	30	260	270	10	20
260	275	15	260	280	20	-5
260	310	50	260	255	-5	55
260	285	25	260	260	0	25
260	290	30	260	290	30	0
260	320	60	260	260	0	60
265	270	5	265	275	10	-5
265	275	10	265	300	35	-25
265	290	25	265	275	10	15
270	275	5	270	280	10	-5

TABLE IV (Continued)

Athletes			Non-Athletes			Difference in Gain
Fall	Spring	Gain	Fall	Spring	Gain	
270	270	0	270	280	10	-10
270	300	30	270	260	-10	40
275	320	45	275	300	25	20
275	290	15	275	300	25	-10
275	275	0	275	290	15	-15
280	300	20	280	310	30	-10
275	280	5	280	285	5	0
275	285	10	280	280	0	10
285	310	25	285	295	10	15
290	290	0	290	310	20	-20
290	300	10	290	315	25	-15
290	300	10	290	300	10	0
290	290	0	290	295	5	-5
295	325	30	290	315	25	5
295	300	5	290	295	5	0
300	310	10	300	320	20	-10
300	300	0	300	320	20	-20
300	300	0	300	325	25	-25
300	315	15	300	300	0	15
310	310	0	315	315	0	0
315	320	5	315	320	5	0
320	330	10	320	325	5	5
320	350	40	320	340	20	10
325	330	5	325	330	5	0
Means		12.53			11.90	.63

Here, the results are radically different. The ratio of the difference of the means to the Standard Deviation of the difference of the two means is .3 which includes only 63 cases out of 100 against the probability of reversal of the advantage with further experimentation. This figure, 63, is slightly better than 50 which is of no more statistical significance than pure guess. Thus, it is very doubtful, judging from this experiment, whether athletes exceed non-athletes in the development of Lung Capacity.

### Conclusions

1. In the case of the comparison of Grip Left, Grip Right and Back and Leg Strength, this experiment shows that these athletes exceeded the non-athletes in these phases of physical development; approximately 98 cases out of 100 favor the athletes. This seems to be a very significant difference.

2. In the comparison of Lung Capacity, the results are not significantly in favor of the athletes; only 63 cases out of 100 favor the athletes; this is not conclusive evidence upon which to base any

definite conclusions. It would seem necessary to measure a much larger group of athletes and non-athletes before stating any definite conclusions with reference to Lung Capacity.

3. In general, participation in athletics seems to be related to certain physical developments not found in non-participation.

4. Regular attendance in required physical education classes is not related to as great a change in certain physical developments as participation in athletics.

5. The presence of other variables such as height, weight, age, heredity, and previous opportunities for physical development may be operative forces in these changes of physical development. Therefore, no final conclusions concerning the influences of these variables are ventured until a more extensive experiment is conducted.

### BIBLIOGRAPHY

- Turner, A. H. The Vital Capacity of College Women. *American Physical Education Review*, 1927, Vol. 32, pp. 593-606.
- Burton-Opitz, R. A. A Study of the Different Methods of Artificial Respiration. *American Journal of Physiology*, 1922, Vol. 61, pp. 562-573.
- Martin, E. G. Strength Tests in Industry. *American Journal of Physiology*, 1917-1918, Vol. 45, p. 543.
- Martin, E. G. Tests of Muscular Efficiency. *Physiological Review*, 1921, Vol. 1, p. 454-475.
- Rogers, F. R. Tests and Measurement Programs in the Redirection of Physical Education. Columbia University Press, 1927.
- Martie, J. E. Exercise and Physical Development. *THE RESEARCH QUARTERLY*, American Physical Education Association, Vol. II, No. 2, May, 1931.
- Martin, E. G., and Rich, W. H. Muscular Symmetry in Human Beings. *American Journal of Physiology*, 1918, Vol. 47, pp. 29-41.
- McCurdy, J. H. *The Physiology of Exercise*. Lea and Febiger, Philadelphia, 1928.



# Recent Studies in the Sargent Jump\*

By C. H. McCLOY  
*State University of Iowa*

IN 1921, Dr. D. A. Sargent presented a new test which he called *the physical test of a man*.<sup>1</sup> This test consisted in springing into the air as high as possible, and taking as the record of the jump the difference between the height reached by the crown of the head and the standing height. Dr. Sargent proposed one formula for scoring this jump based upon the amount of energy developed. He proposed two other formulae based upon other mechanical concepts but none of them was found, upon further study, to be a valid measure of athletic or physical ability.<sup>2</sup>

In 1924, L. W. Sargent<sup>2</sup> studied the Sargent jump statistically and found no significant relationships between the Sargent jump and body build, relative length of leg, height, weight, or any other anthropometric measurement, nor did he find any significant relationship between the height of the jump and the amount of squat or "dip" which preceded the actual jump. He found a correlation of .39 between the Sargent jump and age, though it was evident that the relationship did not hold above sixteen or seventeen years of age.

Bovard and Cozens studied the relationship between the Sargent jump and various athletic tests and published their results in 1928.<sup>3</sup> They found that with a group of college students exhibiting a high degree of athletic heterogeneity, a correlation of .55 was obtained between this jump and four athletic events which were the running high jump, the standing broad jump, the rope climb for speed and the 980-yard run. They found that the reliability of the jump was .61. They found a very small correlation between the Sargent jump and height and weight.

The writer, intrigued by the simplicity of the event and the reasonableness of many of Dr. Sargent's arguments in its favor, began statistical studies and some experiments with this event more than ten years ago. We are impressed with the fact that many of the arguments against this jump as a test in physical education seem predicated upon a lack of knowledge of the nature of the test and its possible uses.

The Sargent jump is primarily a test of the ability of the body to develop *power* relative to the weight of the individual himself.

\* Paper given before the Research Section of the Middle West District Association Convention at Columbus, Ohio, April 1, 1932.

<sup>1</sup> Numbers refer to references at end of article. See reference 1.

Power is the time rate of doing work. In this jump the individual crouches in the position of preparing to jump and does an amount of work necessary to raise the body from the crouched position to the position of complete extension. If this work is done slowly, the body does not leave the ground. If done with sufficient rapidity to cause the momentum of the body to continue the upward motion sufficient to raise the feet from the floor, and to project the body still further upward, the body then "jumps" upward. The amount of *work* is done in a shorter space of time and the *power* developed is greater. In other words, this is a test of how fast one can work.

While a considerable amount of strength is necessary, it is found that the force used in the highest of jumps is much less than the potential force of the legs as shown by the dynamometer. The *limiting* characteristic is probably the viscosity of the muscle tissue. Hence while considerable strength is needed to obtain a maximum jump, this is not the major item: the test is not primarily a strength test. Power is force times velocity ( $P = FV$ ). Hence the jump is a measure of the way in which force can combine with the highest possible contraction-velocity of the muscles so as to project the body upward to a maximum height.

A number of athletic performances are likewise power events. This is true of most track and field events; the sprints, the jumps, and the throws are all events demonstrating maximum muscle contraction over a minimum of time. Since speed and vigor of movement are characteristic of many of the athletic sports such as football, baseball and basketball it would follow that the Sargent jump *should* be an excellent item to be included in a battery of tests designed to test, among other things, this item of explosive muscular contraction. In so far as these performances depend upon this ability to develop power, just so far should this test be of value for predicting the individual's potential ability in these activities. Obviously this jump is not a test of specific skill or learned game-co-ordinations, neither is it a test of courage, athletic headwork or great strength. One would therefore expect to find that a high relationship exists between this jump and such events as track and field athletics. Owing to the fact that degrees of skill differ widely, one would not expect to find a perfect correlation.

When reading the studies cited above, the writer was impressed with the fact that in all of them there were certain vital omissions. If one were to expect to obtain a high degree of correlation between the results of a large number of achievement tests of school subjects such as reading comprehension, arithmetic, vocabulary comprehension, etc., and a verbal abstract intelligence test, one would certainly expect to obtain such a correlation only where the pupils tested had studied the subjects involved in the achievement tests, and in addition

were able to read. When one conducts such tests in the seventh grade, one assumes that all of the pupils have come through a relatively standardized curriculum covering the preceding six grades or their equivalent. One can reasonably assume then that differences in abilities will to a very large extent reflect individual differences in innate capacities. All the students have had ample practice in reading, writing and other subjects, though they have not had this practice on the test materials themselves. The reason for not giving the practice on the test materials themselves is that if the pupils learn the correct answers the test will of course be invalid for that particular group.

This is not true, however, in athletic tests. To permit a pupil to practice the running high jump does not by any means indicate that two weeks later he may break the world's record; and in *this kind* of physical activities test—namely those depending upon the ability to develop power—practice simply reduces the random errors due to heterogeneity of experience and training.

Again we know that physical abilities vary from day to day. Thus a shot putter may be able to put forty-two feet today and a week from now not be able to exceed thirty-eight feet. This varying ability is due to a number of physiological influences which need not be discussed at this point. Suffice it to point out the fact that these differences of performance ability do occur. Hence the record of any individual for the Sargent jump may be effected by one or both of two factors: the first is the skill or ability or co-ordination necessary to perform the jump correctly. The second is the ability to do one's potential best at any given time.

Similarly, if the Sargent jump is to be correlated against athletic activities, these athletic activities themselves should be practiced until skills are a constant; and the highest correlation will be obtained when these events are practiced frequently enough that one's best possible performance is produced. In none of the experiments discussed above was adequate practice given in either of the events. In addition, the Bovard-Cozens battery included a run of almost a thousand yards—in which courage and endurance are primary factors—and a rope climb which involves muscle groups not commonly used by the average student.

### Reliability of Test Elements

Before we could use the Sargent jump or the various athletic events for the purpose of studying the relationship between this jump and "power athletics," it was desirable to ascertain the reliability of both batteries. We used four track and field events as follows: one hundred yard dash, running high jump, standing broad jump, and eight pound shot. The reliability of this test battery was .890 (one

thousand cases). The reliability of the Sargent jump was done on a smaller group. The individual tested was first instructed and trained in the techniques of the jump. The correlation between the best jump of each of two series of three attempts was .770. When the best jump from two series of three jumps each (performed on different days) was correlated against the best from two other series of three jumps each, also done on two different days, a correlation of .854 was obtained. When the correlations of these four jumps were corrected for attenuation, a reliability of .980 was obtained. In each case these reliabilities are sufficiently high.

### Test Procedure

The test procedure varied somewhat with the different groups studied. This variation was largely a matter of the different amount of time given to the preliminary practice of the test events. In every case the Sargent jump was taught to the group until the form was learned and the performance of the jump was mechanically satisfactory.

The form of the Sargent jump taught was as follows: The individual stood in the center of an eighteen inch circle. He was instructed to swing his arms downward and backward, inclining the body slightly forward and bending the knees to about ninety degrees—in other words to assume the usual position that precedes a standing high jump. He was instructed to pause in this position, the purpose of the pause being to eliminate the possibility of a double jump. He was then told to jump upward as high as possible, swinging his arms violently forward and upward to the vertical. Just before the highest point of the jump was reached he was told to swing his arms forward and downward to the side, the end of this downward motion timed to coincide exactly with the end of the upward jump. The whole body at this moment was straight and the crown of the head was extended upward as high as possible. The test was not given until this form had been mastered reasonably well.\*

\* The jump should not be tested as described by Dr. D. A. Sargent,<sup>1</sup> for the first jump is usually the best. The method reported by Bovard and Cozens<sup>2</sup> is much better. We use a somewhat simpler apparatus (suggested by Dr. C. R. Griffith) but one based upon the same principle.

The "chalk jump" is approximately as adequate as a measure of power as is the Sargent jump. It is, however, more difficult to administer. In the first place, the form demands that the jump be similar to that described for the Sargent jump, but that only the free arm be swung downward to the side as the top of the jump is approached. This asymmetrical movement is hard for most pupils to learn. If the chalk jump should be used we have found the following method of administration the preferable one. First ask the pupil to stand with his back to the wall and raise both arms upward as high as possible, elbows straight, backs of wrists against the wall, and fingers extended upward. Mark the highest level reached by the middle fingers of both hands. Then give the subject a piece of chalk about an inch and a half in length. Have him stand with either side toward the wall (his right side if he is right-handed) and jump as described in the Sargent jump except that at the top of the jump he makes a mark on the wall with the chalk as high as he is able to reach. The height of the jump is taken from the mark made at his finger tips when standing against the wall to the highest of his chalk marks.

This method of marking the preliminary height was adopted because a number of pupils attempt to gain an unfair advantage by not reaching as high as is possible for them to reach with the chalk. If the chalk jump is well learned, it is apparently as valuable as the Sargent jump. Its correlation with the Sargent jump is .98 (corrected for content-nu-

Practice in the four track and field events used was likewise given until the individual could perform the activity with good "form" and without manifesting the phenomenon of "tying up." In most cases practice on the track and field events was not as thorough or continued for as long a time as was that on the Sargent jump, though most of the individuals had practiced the track and field events previously. In no case was the correlation corrected for attenuation.

Although the previous studies had indicated that height and weight had but small relationship to the *Sargent jump*, we added age, height and weight to the present study because of our desire to include these variables in the prediction of *athletic ability*.

In the discussion of the results below, we shall make use of the term "Classification Index:"\*\* This term is used to denote an index of size and maturity obtained by the following formula:

$20 \text{ (Age in years)} + 6 \text{ (Height in inches)} + \text{(Weight in pounds)}$  Age is not added beyond seventeen. The correlations obtained with this combination are practically never more than one probable error below the "best" combination of these same variables in other combinations. This Classification Index is not applicable to girls, at least not in the senior high school age range.

### Results

The first study was made on a group of Chinese physical education majors. This group comprised but twenty-six individuals but all of them were seniors in a professional course of physical education and were well trained in the techniques of both the Sargent jump and the track and field events. Hence we should expect to get relatively high correlations with this group, and our expectations were rewarded. The correlation of track and field athletics (four events equally weighted and scored on the author's scoring tables<sup>4</sup>) with Sargent jump was .752, with height .665, and with weight .733. When combined with the optimum weighting, the multiple correlation was .890 with Sargent jump, height and weight, and .888 with Sargent jump and weight alone. The best weightings were approximately as follows:

(1)  $6 \text{ (Sargent jump in inches)} + \text{(weight in pounds)}$

(2)  $11 \text{ (Sargent jump in inches)} + 6 \text{ (height in inches)} + \text{(weight)}$

This is the same as the  $11 \text{ (Sargent jump)} + \text{(Classification Index)}$ , since age in this group would be a constant.

The second study involved a group of high school boys in Iowa City. This group had practiced the Sargent jump but had not practiced the track and field events as thoroughly. The results for this group were as follows:

\*\* The derivation and validation of this index is discussed in *The Measurements of Athletic Power* by C. H. McCloy, A. S. Barnes and Co., New York, 1932.



Correlation of the track and field score with Sargent jump alone was .591. Height, in this group, added little, and can be neglected. The multiple correlation with Sargent jump, age and weight was .719, and with Sargent jump and Classification Index was .700.

The best weightings were as follows:

(1) 7 (Sargent Jump in inches) + 12 (Age in years) + weight

(2) 16 (Sargent jump in inches) + (Classification Index)

The third group was composed of senior high school girls. The form in the Sargent jump with this group was not as good as with the boys, but their practice in the track and field events was probably as thoroughly done. The results on this group were as follows:

Neither age, height nor weight gave any significant correlation, and, in the senior high school, can apparently be disregarded. This statement is corroborated by other studies. This problem needs further study, however. The correlation of track and field points with the Sargent jump alone was .582.

The fourth group was composed of senior high school, junior high school and elementary school boys all of whom had had considerable practice and training in both track and field events and the Sargent jump itself. The discussion of this group will be divided into three parts, each part concerned with one of the school groups by itself. The number of cases in each of these groups was small, which magnified the probable errors, and the random sampling errors.

a. *Elementary school* (fifth and sixth grades)

The correlation of track and field points with Sargent jump alone was .651. The partial correlation with weight was negligible. With the best combination of Sargent jump, age and height, the multiple correlation was .792. With Sargent jump and Classification Index, the correlation was .776. The combination formulae were:

(1) 2 (Sargent jump) + 3.5 (Age) + Height

(2) 32 (Sargent jump) + (Classification Index)

b. *Junior high school*

The correlation of track and field points with Sargent jump alone was .695. With the best combination of Sargent jump, age, height and weight, the multiple correlation was .927. With the Sargent jump and the Classification Index, it was .874. Height in this group gave a significant *negative* partial correlation. No reason is assigned for this.

The "best" combinations were as follows:

(1) 11 (Sargent Jump) + 8 (Age) - 3 (Height) + Weight

(2) 10 (Sargent Jump) + 7 (Age) + Weight

(3) 29 (Sargent Jump) + (Classification Index)

c. *Senior high school*

The correlation with Sargent jump alone was .651. The multiple correlation with the Sargent jump, and various "best" combinations



of age, height, weight and Classification Index ranged from .722 to .728, and there is little to choose between them.

The formulae were as follows:

- (1)  $70 (\text{Sargent jump}) + 10 (\text{Age}) + 15 (\text{Height}) + \text{Weight}$
- (2)  $71 (\text{Sargent jump}) + 5 (\text{Age}) + 22 (\text{Height})$
- (3)  $87 (\text{Sargent jump}) + 22 (\text{Height}) + \text{Weight}$
- (4)  $44.5 (\text{Sargent jump}) + (\text{Classification Index})$

The final group was composed of a group of physical education majors of the State University of Iowa. This group had had considerable practice in track and field activities but had had only about ten minutes instruction on the form of the Sargent jump. The results obtained were as follows:

The partial correlation with weight was negligible, and was disregarded. The best correlation with track and field athletic ability was with Sargent jump and was .743. With Sargent jump and height—a correlation of .783. With the Classification Index and Sargent, the correlation was .758. The optimum formulae were as follows:

- 2 (Sargent jump in inches) + (height in inches)
- 35 (Sargent jump in inches) + (Classification Index)

Further study was made upon the Iowa City High School groups of both boys and girls. In each study the correlations were computed against a large battery of general physical achievement tests. This gave a more comprehensive test than was the case with the correlation against track and field athletics alone. The results of these studies were as follows:

a. *Boys:*

- 15 (Sargent jump) + (Classification Index)

Correlation = .712.

b. *Girls:*

Sargent jump and motor ability, correlation = .661.

These results seem conflicting so far as formulae are concerned, but much of this is undoubtedly due to the chance errors of small samples. There are, very probably, some age differences. The important thing is that the Sargent jump, when combined with some appropriate formula-constellation of age, height and weight, does predict the *power type* of athletic ability very accurately indeed. As stated above, we have further evidence that more than one day's trials produce markedly higher correlations with athletic ability.

### Summary

From the results presented above it would seem that the Sargent jump when standardized, practiced and correctly administered is undoubtedly a valuable test. It does not test all of the elements of general motor ability. *When combined with other tests* we have found that the battery correlates (uncorrected for attenuation) about .93

with a large battery of achievement tests.<sup>5</sup> This test measures only the ability to develop *power* and does not measure motor educability or agility. From our experience, higher correlations can be expected when the best result of more than one day's jump is correlated against the individual's best athletic performance. In the administration of the test the method of measurement must be accurate.

The Sargent type jump is not the one perfect test—but it is probably the one best test we have for predicting the explosive energy (power). If used in connection with other tests its results may well be of great usefulness in a program of physical education.

We should suggest the following formula as being as satisfactory as any we can suggest at the present time:

$$25 \text{ (Sargent jump in inches)} + \text{(Classification Index)}$$

This weighting of the Sargent jump is an approximate average of the results of the different studies reported above. It will correlate about as highly as any of those reported there.

This jump needs much more study upon larger numbers of controlled groups. It will, when properly used, undoubtedly retain its place as one of the best individual test items we have.

### References Cited

1. SARGENT, D. A. "The Physical Test of a Man," *Am. Phys. Educ. Rev.*, 26:188. April, 1921.
2. SARGENT, L. W. "Some Observations on the Sargent Test of Neuro-muscular Efficiency," *Am. Phys. Educ. Rev.* 29:47. February 1924.
3. BOVARD, J. F. and COZENS, F. W. *The Leap-Meter*. University of Oregon Pub., Eugene, Oregon. Phys. Educ. Series 1, No. 2, 1928.
4. McCLOY, C. H. *The Measurement of Athletic Power*, A. S. Barnes and Co., New York, 1932.
5. McCLOY, C. H. A Tentative Classifying and Grading System for Physical Education, Based on Measurements of Motor Ability. Mimeographed privately.

# Personality Traits of College Majors in Physical Education\*

By C. E. RAGSDALE  
*Assistant Professor of Education*  
*University of Wisconsin*

## I. Introduction

IT seems reasonable to believe that a man or woman in deciding upon a vocation is attracted to it because of certain factors in his individual make-up growing out of his social and physical background and heredity. These factors may vary with the individual in the strength of their influence and in the forms in which they appear, but they are always present. This situation should hold true also in the case of young men and women choosing their college courses. This paper is a study of these influencing factors in the lives of college men and women majoring in physical education. In other words, is the physical education major a definite type standing out from the other students by reason of a difference in personal traits?

The material for the major part of the study has been obtained from the records of the university registrar. The data are available for the two classes that entered as freshmen in the years 1929 and 1930. In 1929 the new system of educational guidance was inaugurated at the university by which a comprehensive application blank is filled out by the applicant for admission and by his high school principal.

Most of the data for this study are taken from this application for admission. It is divided into three parts: (1) General Information—this is filled out by the applicant himself and deals with his interests, ideals, and past experiences; (2) Personal Qualifications—this is filled out by the high school principal or by a teacher designated by him; it is the general estimate of the school as to the character and ability of the applicant; (3) Certificate of Recommendation—this is the principal's record and recommendation of the applicant.

## II. Men Majors in Physical Education<sup>1</sup>

Fifty-seven complete applications were found for men enrolling in the physical education course as freshmen in the years 1929 and

\* Paper given before the Research Section of the Middle West District Association Convention at Columbus, Ohio, April 1, 1932.

<sup>1</sup> C. H. Matthusen, Master's Thesis, 1931.

1930. Thirty of these men finished the year's work for which they were enrolled and twenty-seven withdrew from school before finishing the year's work.

In order to make the study effective, a control group was used—that is, an equal number of students taking the general course in letters and science was studied for purposes of comparison. The records of thirty letters and science students who finished their year's work, and of twenty-seven who withdrew before finishing were taken. In order to make the two groups as nearly as possible equal in intelligence, the fifty-seven letters and science students were paired with the physical education majors according to their percentile rankings in freshman intelligence tests.

*Family Background.* The fathers of nearly half of the letters and science students studied are engaged in trade, as compared with twenty-nine per cent of the physical education students. The latter show no definitely outstanding occupational group. The physical education students come from larger families than do the letters and science students. The families of the physical education students average 4.6 children, while those of the letters and science students average 3.4 children. There are five physical education and nine letters and science students who are the only children in the family. Seventy-three per cent of the letters and science students as compared with sixty-six per cent of the physical education students worked while in high school, but a larger number of the latter are inadequately financed for their first college year.

*High School Activities and Interests.* The study most universally liked is *social science* which is preferred by forty-two per cent of the physical education, and twenty-eight per cent of the letters and science students. *Mathematics* is the subject most disliked. It is mentioned in this connection by twenty-eight per cent of the physical education, and thirty-one per cent of the letters and science students.

The preferences and dislikes for high school subjects are reflected in the subjects failed or conditioned. The fewest failures or conditions are in social science. The most failures are in mathematics for letters and science students, and in art and literature for the physical education students. Sixty-three per cent of the letters and science and forty-nine per cent of the physical education students have never received a grade of condition or failure.

*Athletics* is the most popular high school activity. It is mentioned by ninety-eight per cent of the physical education and eighty-two per cent of the letters and science students. The letters and science students are more varied in their high school activities than are the physical education students.

The physical education students surpass the letters and science students in special recognition received for high school activities. This recognition is for both athletic and scholastic attainment.

The letters and science students do a considerably greater amount of reading than the physical education students.

Forty-three per cent of the physical education and twenty-six per cent of the letters and science students mention "Athletic Events or Awards" as the activity which brought them the greatest personal satisfaction. The letters and science students show a much wider range of activities and achievements in which they have taken pride. The two groups have much the same interests in regard to experiences which have affected personal development or plans.

*College Activities and Interests.* The two outstanding purposes in attending college are: "Preparation for Life Work" and "Desire for Knowledge." The first was mentioned by almost the same number of each group, but for the second there were fifty-six per cent of the letters and science as compared with only forty-two per cent of the physical education students.

"Athletics" was the primary motive of the physical education students in choosing Wisconsin, and "Parent" was the greatest influence of the letters and science students. The second motive of the physical education majors was "Interest in a Special Subject." This subject is presumably physical education.

Ninety-six per cent of the physical education and sixty-eight per cent of the letters and science students intend to engage in athletics as a college activity. Dramatics is second most popular with both groups. Barring athletics, the letters and science students show considerably more interest in college activities than do the physical education students. There is a decided drop from the degree of participation in high school activities.

*Personality Rating by High School Principal.* The physical education students were better liked by their fellows than the letters and science students. This may be attributed to the well known "hero-worship" of athletes, but we must remember that nearly as many letters and science as physical education students were participants in athletic activities in high school. The physical education students likewise are recognized as better leaders.

In degree of emotional control the physical education students show a slight superiority, while the two groups are about evenly balanced in regard to initiative shown in doing school work. The physical education students are slightly more purposeful in the direction of their energies.

The two groups are about even in the matter of probable scholastic record, although the physical education students tend toward the

two extremes, and the letters and science students seems more generally average.

### III. Women Majors in Physical Education<sup>2</sup>

Seventy-five women majors in physical education are included in this study. They are all the members of the classes entering in the fall of 1929 and 1930 for whom records are available. Twenty-eight of those entering in 1929 had dropped out of the physical education course by the end of their freshman year. The remaining forty-five freshmen and sophomores were paired with freshman and sophomore women in the college of letters and science on the basis of intelligence test score. The comparisons made in this paper between physical education majors and letters and science students are therefore between groups of equal intelligence.

*Family Background.* The fathers of twenty-three per cent of the letters and science group and seventeen per cent of the physical education group are engaged in professional occupations; twenty-five per cent of the fathers of each group are engaged in commercial occupations; and nineteen per cent of the letters and science group and twenty-five per cent of the physical education group are engaged in skilled trades. The families of the letters and science students average three and four-tenths children while those of the physical education students average two and nine-tenths children. The families of the physical education students who dropped out average four and three-tenths children. There are more only children in the letters and science and in the dropped group than in the group continuing in physical education. Those dropping physical education tend to be the only child or older children in their family. Seventy-five per cent of both groups have adequate finances and about the same number in both groups engage in gainful work while in college.

*High School Activities and Interests.* The modern languages are the preferred subjects for all groups but are more preferred by the letters and science students. *Social sciences* are ranked relatively high by both. *Natural sciences* are more preferred by the physical education students than by the letters and science students. Both groups dislike *mathematics* and a large number of both groups dislike *social sciences*.

Physical education majors engaged in fifty per cent more extra-curricular activities in high school than letters and science students and in more than twice as many as physical education students who dropped out during the first year in college. Thirty-eight per cent of the high school activities of physical education students are athletic; thirty per cent of the activities of the letters and science stu-

<sup>2</sup> Lena L. Jay, Master's Thesis, 1931.



dents and forty-five per cent of the activities of dropped physical education students are athletic. Organized social service activities were second highest in all groups. For the literary-dramatic-artistic group the percentages are: letters and science, thirty-two; physical education, twenty-seven, and dropped physical education, nineteen.

The recreations most preferred by letters and science students are, in order: reading, swimming and dancing; in the physical education group the preference is: swimming, reading and dancing.

Thirty-six per cent of the physical education majors gained their greatest personal satisfaction from athletic achievements as contrasted with six per cent of the letters and science students. Scholastic achievement as the source of greatest satisfaction was listed by thirty-six per cent of the letters and science students, twenty-three per cent of the physical education students and by seven per cent of the dropped physical education students.

Special recognition for excellence in scholastic work was received fifty-two times by the letters and science students, thirty-four times by the physical education students and seventeen times by the dropped physical education students. Recognition for excellence in extra-curricular activities was received forty times by the letters and science students and fifty-four times by the physical education students.

Physical education girls read popular magazines more and current news events less than letters and science girls.

*College Activities and Interests:* About half of all groups of girls give "preparation for life work" as their chief reason for coming to college. Forty-seven per cent of the letters and science group and thirty-seven per cent of the physical education group give "desire for knowledge" as their reason, while four per cent of the former and eleven per cent of the latter list "Friends."

More of the physical education girls think the advantage of sorority membership is in the opportunity to make friends, while more of the letters and science girls think of it in terms of social advantage and prestige.

*Scholastic Record.* Physical education majors have skipped fifty per cent more grades in elementary school than letters and science students. In high school physical education majors have two and one half times as many failures as letters and science students. Foreign languages and mathematics account for more than three-fourths of the failures in both groups. In the university the situation is again reversed and the physical education majors have a higher scholastic record. A possible interpretation of these differences between two groups of equal intelligence may be offered. The physical education group has more scholastic success in the grades because of greater physical vitality and motor responsiveness; in high school they are less

successful because of a greater amount of participation in extra-curricular activity; in the university they again make a better record because they have found a controlling interest in their professional training.

*Personality Ratings by High School Principals.* In appearance and manners and in purposeful use of time, letters and science and physical education girls are given the same rating. In leadership and in initiative physical education girls are superior, and more of them are rated as having a high degree of emotional control.

*Emotional Traits of Women Majors in Physical Education.*<sup>3</sup> This investigation was conducted at the University of Wisconsin using thirty-one students who were especially interested in dancing and twenty-nine majors in physical education who did not care for it. The study was made by administration of Pressey X-O tests for emotionality and Marston's introversion-extroversion rating scale. The Pressey tests show that both the dance group and the general physical education group are better balanced emotionally than women college students in general. The Marston rating scale shows that both groups tend toward extroversion.

#### IV. Summary

Men majors in physical education come from large families and are inadequately financed, while women majors come from small families and are satisfactory financed. Only children or older children in the family tend to drop out. Both men and women have engaged in a large number of extra-curricular activities in high school. Their interests have been primarily in athletics, but those who remain in the physical education course more than one year must have had other interests as well. Both men and women like social science and dislike mathematics, women like modern foreign languages. They have a record of more failures in high school than letters and science students of equal intelligence, but have a better record in the elementary school and in the university.

Emotionally they are better balanced than letters and science students and tend more toward extroversion—that is toward interests in things outside of themselves. They show more initiative and leadership than the letters and science students and have already developed a controlling interest in life which the letters and science students lack.

<sup>3</sup> Monica R. Wild, Master's Thesis, 1930.

## BOOK REVIEWS

ELEMENTARY SCHOOL LIFE ACTIVITIES. Vol. II. Group-Interest Activities. F. C. Borgeson. A. S. Barnes & Co. 140 pp. \$1.00.

The second volume of *Elementary School Life Activities* will be of most help to teachers and advisers, who are responsible for clubs, publications, and social activities.

The fact is stressed by the author that time should be allowed during the regular school day for these activities. This should meet with the approval of both educators and parents, who are recognizing the danger of a heavy "extra-curricular" program.

The following table of contents indicates the comprehensive handling of the subject:

- Trips and Excursions
- Clubs
- Publications
- Athletics
- Music
- Social Activities
- Activities Sponsored by Co-operative Organizations

Part of every chapter is devoted to types of current practice concerning each special group. A bibliography accompanies each type of activity discussed.

Excellent ideas for inaugurating and planning the work are given. However, discretion must be used in selection of some of the material suggested by various contributors. For example, high jumping and basketball are listed as part of a program for girls of elementary school age. Present-day opinion of physical education leaders would not accept this type of activity for pre-adolescent girls. Likewise, the creative phase of music could well have found more emphasis in a book in which the cen-

tral theme is activity motivated by pupil interest.

Mr. Borgeson has made a contribution which will be welcomed by educators who have long felt a need for organized material in this field.

Helen Gass, Assistant Supervisor,  
Elementary Physical Education,  
Long Beach City, Calif., Schools.

SPORT IN AMERIKA. Dr. Carl Diem. (German) Berlin, 1931. 211 pp.

This book, written in German, is the result of an inspection journey through our land by a man who has earned for himself an enviable reputation as expert in the field of sport, as well as physical education in general, in Europe. It was a professional journey in the main; pleasure was only incidental.

In true thoroughgoing fashion, Doctor Diem viewed procedure, as well as equipment, at its source. *Sport in Amerika* is profusely illustrated with pictures, almost all of which were taken by the author. These pictures are accompanied by a running comment aimed to serve his own country, rather than ours, for he experienced much that he would have his country emulate.

It is interesting to note that some of the intimate information which Doctor Diem gained from hearsay is highly colored, and portrays what we hope to achieve, rather than what has been achieved. He has much to say about our camps, which have been recognized as one of the outstanding contributions by America to the youth of the world. One of his reactions is rather significant to us, which is that most of our splendid stadias are locked up practically all the time, whereas in Germany they are open all the time for public use and only on special occasions are admissions charged.

Those who had occasion to meet Doctor Diem will be delighted to have this book, for he is most gracious in his expression of gratitude for all the thoughtfulness that was bestowed upon him.

Carl L. Schrader,  
State Supervisor of Physical  
Education, Boston, Mass.

TAIT MCKENZIE—A SCULPTOR OF YOUTH. Christopher Hussey. Country Life Press, Ltd., London. John Archinal, Agent, Philadelphia. 112 pp. 143 illus. \$10.00.

Dr. R. Tait McKenzie, surgeon, scientist, athlete, and noted artist, is the first sculptor since the time of the Greeks to take the athletic ideal as the subject of his art—"the first man of our civilization to translate athletic actions into plastic beauty." "His work, like himself, is sane, reasonable, direct, and his purpose is to shape life in its finest physical state." In his sculpture, he has caught the beauty of the human form, and through it all he expresses the spirit behind the action.

The author of this charming book gives a bit of Dr. McKenzie's history and background, then illustrates and describes a number of his works of art. Dr. McKenzie is now Research Professor of Physical Education at the University of Pennsylvania. He has had a rare opportunity to study young men through his intimate contact with them.

The facial masks showing effort, breathlessness, fatigue, and exertion are scientifically accurate and therefore of practical use to the coach and physical educator. Likewise, of practical use is the "form" shown in the various athletic activities. In his early work, Dr. McKenzie employed metrical methods of modelling. His athlete, for example, represents the physical ideal as arrived at by scientific methods.

Dr. McKenzie is world-famed because of his war memorials through which he has depicted the splendid spiritual qualities called forth in the youth of that time, rather than the hideousness of war. Great versatility is

shown in the photographs and medals and a rare sense of humor is displayed in his grotesques.

A list of articles, books, etc., written by or relating to Dr. McKenzie appears at the end of the book.

Helen C. Paulison,  
Assistant to the Editor, *Journal of Health and Physical Education*.

TWENTY-FIVE NEW FIGURE AND CHARACTER DANCES. Elizabeth Turner Bell. A. S. Barnes & Company, New York, 1931. 112 pages with music supplement of 67 pages. \$4.00.

*Twenty-Five New Figure and Character Dances* is a recent book by the author of *Fifty Figure and Character Dances*. Those who have used the first volume will need no introduction to the delightful material contained in the present edition. With the exception of the last group of Scottish Dances, the material is planned especially for young children and would probably be enjoyed most by them.

Two rather unusual but very delightful types of dance material for children, the story in dance and the song drama, are splendidly illustrated by such dances as "The Pied Piper," "O, Dear! What Can the Matter Be?" "The Old Woman and the Peddler," and "The Wraggle-Taggle Gipsies, O." Other types included are the Rhythmic Game, Rhythmic Movements, Musical Interpretations and the group of Scottish Dances. The music is largely folk type, but there are in addition a few well chosen selections from such composers as Chopin, Schumann, and Tchaikowsky.

The book itself is extremely readable. The clear type, the abundance of diagrams, and the full page pictures illustrating each dance make it a very simple matter to interpret the material. Another convenient feature is the fact that the music, while bound separately, fits neatly into a section in the back of the book. It is an addition to dance literature which should cer-

tainly prove most helpful to the teacher who works with children.

Florence M. Curtis,  
Head of the Department of  
Physical Education for Women,  
Indiana State Teachers College,  
Terre Haute, Indiana.

**TWENTY-FIVE NEW FIGURE AND CHARACTER DANCES.** Elizabeth Turner Bell. A. S. Barnes & Co., New York, 1931. Text and Music, \$4.00.

This book, divided into six sections including simple rhythms, dramatic dances, music interpretations, and Scottish folk dances, is an extension of the author's *Fifty Figure and Character Dances*. It adopts the dramatic approach to teaching rhythms, calling for definite mimetic action interpretative of a story or mood. The movement employed is either simple locomotion such as runs and skips, or derived ballet steps such as *chasse* and *pas de basque*. Costume for each dance is fully described and illustrated.

The section of Scottish folk dances, being traditional, needs no comment. Of the other five sections, there can be no criticism except by the standards of modern educational theory, in which case the attitude underlying the presentation of this book appears open to question. That attitude has all the prestige of long and well-nigh universal acceptance, and to many, any questioning of it may seem both strange and impertinent. Nevertheless there exists a sufficiently large and authoritative dissenting group to warrant the critical stand. Satisfactory justification of a negative judgment would require an exposition of modern educational theory which lies quite outside the limits of a brief review. It must suffice to say that under the revised conception of the function of rhythmic activities in the school program, teacher-devised dramatizations and prescribed interpretations are to be rejected as standing in the way of creative spontaneity. The child dancing, in the modern vernacular, should be the child exploring space with the tools of free movement, under the rich

discipline of music whose laws he learns thus to understand. His gestures are his own, arising out of an impulse to communicate his experience with space, sound, and idea; and not, therefore, the reproduction of a code of movement set out for him to memorize. The neat sterility of children all in a row, toes pointed, can have nothing to do with such a purpose. It can express nothing except perhaps the teacher's own sense of order.

It is doubtless unfair to make this book a point of departure for a controversial statement about the activity in question, but the opportunity is inescapably available. If its basic premise be acceptable, the book merits no censure. If, however, one disagrees with that, it can only be described as a competent addition to the literature of a phase in the teaching of rhythms which is rapidly being replaced, presumably by a preferable phase.

Mary Jo Shelly,  
Columbia University.

**INJURIES AND SPORTS.** C. B. Heald.  
Oxford University Press. 543 pp.,  
380 illustrations. \$6.00.

As the cover states, this book was written to provide the general practitioner, and others involved in the care of athletes, with a reference book for the injuries associated with sport. With certain limitations it does this adequately. It is presented clearly and, aided by some very good illustrations, is readily understood. At the front and back of the book are manikin charts which serve as an excellent graphic index, guiding the reader. There is also a very well planned appendage in the back of the book wherein one may find, in synopsis form, the essentials for diagnosis and treatment.

The author has covered the field of sports in which the individual is outstanding, such as golf, tennis, riding, fencing and the like, but has failed to mention, to any great extent, the injuries of our strenuous sports: ice hockey, football and baseball. This is natural, due (probably) to the writ-



er's unfamiliarity with our American games. For example, no mention has been made of the injuries caused by the spikes of baseball, the "charley-horse" of football and baseball, and the "pulled tendons" of track. The work on "tennis elbow," "games back," and "games knee" is well done, while the discussions of subdeltoid bursitis and sprained ankle are not especially complete. The descriptions of the various fractures are essentially brief and elementary and many of the splints shown are bulky and not used very much in America. The value of thorough inspection and a careful examination is well brought out. The chapter on the repair of torn tissues and fractures, though brief, is very well done and makes an excellent addition to this book.

Electro- and physio-therapy is advanced as part of the treatment for all injuries. In the hands of a man well trained in this field, this form of therapy is very useful but should be undertaken very guardedly by general practitioners and others. Most of the general practitioners in this country are not qualified to use any but the simplest of its forms.

This book should be of value as a guide to diagnosis and treatment to surgeons, general practitioners, physical directors, and others placed in charge of athletes. The author is to be commended for his excellent arrangement of the subject matter and particularly for grouping injuries of this type in book form.

Joseph H. Burnett, M.D.,  
Boston City Hospital,  
Boston, Mass.

#### ALLERGY AND APPLIED IMMUNOLOGY.

A handbook for physician and patient on asthma, hay fever, urticaria, eczema, migraine and kindred manifestations of allergy. Warren T. Vaughn, M.D. C. V. Mosby Company, 1931. 359 pp. with 37 illus. Cloth, \$4.50.

Asthma, hay fever, eczema, and kindred manifestations of allergy have during the past few years attracted the

attention of the layman as well as called forth an enormous amount of research on the part of the physician. As a result of this many books have been published in this field.

This volume is perhaps the best recent work designed for layman and physician. The theories of allergy, immunity, anaphylaxis, etc., are explained and the diseases arising from allergy or associated with this condition are discussed and the treatment described.

The first part of the book is given to a discussion of the theory of allergy, its history and its relationship to heredity. Then comes a discussion of geographic distribution of allergens and their relationship to animals, inhalants and foods. Then follow sections on diagnosis of allergic conditions, and their treatment by desensitization and elimination of offending substances.

The book is fascinating to read as well as scientific and authoritative throughout. It is a most valuable reference book for the physician in general practice, and is a complete success in presenting an important branch of scientific medicine to the lay reader.

R. W. Bradshaw, M.D.,  
College Physician, Oberlin  
College, Oberlin, Ohio.

FUNDAMENTALS OF FENCING. John Johnstone. Edwards Brothers, Ann Arbor, Mich. \$2.00.

American literature on fencing is painfully meager, and most of what has been written is out of print. Virtually the only treatises readily available are Spalding's pamphlet, which is very sketchy, and a translation of the French system used at Joinville-le-Pont. All this is in spite of the fact that fencing has never before enjoyed its present extended popularity. It has been taken up so rapidly, in fact, that there are not enough trained coaches to man the field; and some of those now teaching are not familiar with all the weapons.

Professor Johnstone of the University of Michigan has therefore greatly stimulated American fencing



by publishing his recent book, *Fundamentals of Fencing*. He has given us thorough discussion of the development of the art, and a careful study of the three weapons. This latter fact is rather unusual, as most books go into the technique of the foil quite thoroughly but neglect epee and sabre.

All illustrations are by sketches, which I consider quite fortunate, for technical difficulties attendant upon the reproduction of photographs usually prevent one from telling on which side the blade is passing.

A lucid discussion of the rules is given; and a thorough discussion of the ethics of the game is also included; the latter seems particularly commendable. If all fencers would acknowledge touches, and otherwise observe the sportsmanlike precautions Mr. Johnstone recommends, the bickering over decisions which frequently mark a contest would disappear, making the game more enjoyable for fencer and spectator alike.

Frank A. Riebel, M.D.,  
Fencing Coach, Ohio State  
University.

**ELEMENTARY BACTERIOLOGY.** Joseph E. Greaves, Ph.D., and Ethelyn O. Greaves. W. B. Saunders Company. 2nd edition. 535 pp., 138 illustrations. \$3.50.

The title of this book describes it as well as any review can. Beginning with the historical facts which led to the early development of the subject, the author has very clearly presented this phase of the book. In the next succeeding chapters, there are presented some very interesting facts regarding the role which bacteria play in the life of the individual and the authors very clearly bring out the point that bacteria are friends of man rather than his enemies. Following a brief discussion of the fundamental facts regarding growth, methods of study and chemistry of bacteria, the real relationship of bacteria to man is presented. This latter portion of the book is comprehensive, well diversified to cover the various fields of the sub-

ject and is presented in clear and simple language.

This volume is written in non-technical terms and can be very readily enjoyed by those who do not have any appreciable amount of chemical or other technical knowledge. This book offers the fundamental facts of bacteriology to those in related fields without placing a heavy burden upon the reader. The book is particularly free of formula and statistical data, for which it is to be commended. It is quite unfortunate that the authors used statistics more than ten years old in Fig. 112 on the principal causes of death in adult life.

The printing is good and the book is unusually free from errors. It is thorough and exact in statement of facts, stimulating and open-minded in interpretation. The changes and additions in the new edition have made an excellent book, even more meritorious than the first.

J. E. Simmons,  
Associate Professor of Bacteriology, Oregon State Agricultural College, Corvallis, Ore.

**PUBLIC HEALTH ORGANIZATION.** Report, White House Conference on Child Health and Protection. Century Co., 1932. 345 pp. \$3.00.

The recent White House conference on Child Health and Protection divided its work into four sections, as follows:

- I. Medical Service.
- II. Public Health Service and Administration.
- III. Education and Training.
- IV. The Handicapped.

This book is a compilation of Committee A of Section 11.

By means of a survey of past and present public health activities throughout the United States, *Public Health Organization* makes available to health leaders, teachers and authorities, a vast amount of valuable statistics and general knowledge on health facts. By the formulation of sound programs and recommendations the

committee has made a valuable contribution to the armamentarium of health officers. The book is replete with graphs, tables, and comparative charts, which enable the reader to see at a glance the health standing of all communities. It clearly demonstrates that health is a purchasable commodity and that the results obtained in any state, city, or county are in direct ratio to the amount of proper expenditure for that purpose.

The material is carefully organized and serves to show the chaos and general disorganization of our health laws. To quote from the chapter on Research: "In the forty-eight states there are forty-nine different ways of controlling scarlet fever as one state authorizes two methods."

It is commendable that the book stresses the need of uniformity in health matters, the co-ordination and simplification of methods, and the training of public health personnel. The introduction is a practical and concise statement of purpose. The chapter on Non-official Public Health Organization is interesting as well as educational and brings to one's attention the vast amount of health and welfare work being performed by various independent organizations.

The outstanding feature of this work is the specific recommendation of Congressional legislation, authorizing the transfer of all overlapping federal health activities to the "Public Health Service" department, which would assume leadership in local, state, and national health activities, and grant financial assistance where necessary. The committee might have gone further and recommended a Secretary of Health in the President's Cabinet, or, since health and education have become two integral parts of social welfare, a Secretary of Health and Education. One or both positions will eventually be created. Why not now?

There are but three dissenting opinions from the recommendations of the committee of thirty-nine members, all of whom are of national prominence. The compilation of this volume has entailed an immense amount of labor and

is a distinct contribution to national social welfare.

L. M. Smith, M.D.,  
Examiner, Division of Child  
Labor, Pittsburgh Public  
Schools.

**BODY MECHANICS: EDUCATION AND PRACTICE.** Report of Sub-committee on Orthopedics and Body Mechanics of the White House Conference on Child Health and Protection. Century Co., 1932. 165 pp. \$1.50.

The members of the sub-committee on Orthopedics and Body Mechanics are: Robert B. Osgood, M.D., Chairman; John B. and Buckminster Brown, Professor of Orthopedic Surgery, Harvard University Medical School, Boston; Lloyd T. Brown, M.D., Instructor in Orthopedic Surgery, Harvard University, Harvard University Medical School; John B. Carnett, M.D., Vice-Dean and Professor of Surgery, Graduate School of Medicine, University of Pennsylvania, Philadelphia; Armen Klein, M.D., Assistant Professor of Orthopedic Surgery, Tufts College Medical School, Boston; Leah C. Thomas, Assistant Professor in Department of Hygiene and Physical Education, Smith College, Northampton, Massachusetts.

The purposes of the report, as stated by the committee, conform to the three main purposes of the committee on Medical Care for Children. In the field of body mechanics, the purposes are to determine: (1) what is already being done; (2) how completely the demands for this type of medical care are at present satisfied; (3) what ought to be done.

The committee, in presenting the material, states frankly that the evidence in the report is based on clinical experience and lacks scientific laboratory confirmation. The strength of the report lies in the fact that the authors make no exaggerated claims in offering the results of their investigation and study. The material in the report is judiciously evaluated and furnishes convincing evidence of the outstanding needs for a more specific type

of training for all boys and girls in posture and health instruction. The authors present, from a clinical point of view, challenging information on the prevalence of poor body mechanics, and the effects and values of improving the body mechanics of both children and adults throughout the country.

The authors state that the term "Body Mechanics" was chosen in preference to "Posture" as being more descriptive and more inclusive. The use of the traditional A-excellent, B-good, C-poor, D-very poor classification of body mechanics is recommended for practical purposes. A more accurate classification is mentioned—"A Method of Recording the Posture of Pre-School Children," Mary E. Sweeny, Helen King, Charles A. Wilson, and Lucea Hejinian, Merrill-Palmer School, Detroit, 1929.

Some of the important points mentioned in the complete determination of the status of the child in respect to body mechanics are: (1) relative measurements of length of legs; (2) flexibility and muscle balance of the feet and their weight bearing lines; (3) roentgenological examinations; (4) general medical examination.

The widespread tendency to weak feet and pronated ankles is illustrated by reports from Pasadena City Schools and by the Chelsea survey. A slight misunderstanding of the report from Pasadena is noted. The corrective report, Pasadena 1930-31, shows that out of 200 children assigned to corrective physical education because of undernourishment, posture, foot, or other defects, or a combination of all, 80% of this group exhibited foot defects. However, the number of foot defects in any unselected group is large as shown by the Chelsea survey, or by the survey of any unselected group of children of elementary age.

A variety of studies is given, showing the association of good body mechanics with good health and poor body mechanics with poor health. An interesting statement from Dr. Carnett, Vice-Dean and Professor of Surgery, Graduate School of Medicine,

University of Pennsylvania, Philadelphia, is: "He believes that the most common cause of parietal pain and tenderness, especially in individuals under thirty years of age, is excessive lumbar lordosis—one of the commonest manifestations of faulty body mechanics—from which arises irritation of the spinal nerves as they pass through the intervertebral foramina. He has found that pain and tenderness disappear with the correction of the excessive lordosis and the faulty body mechanics."

Valuable material is given for the promotion of good body mechanics in the section devoted to the listing of agencies, schools, departments of physical education, hospitals, health centers, medical schools, schools of physical education, nurses, etc., that are making constructive efforts to solve the problem of poor body mechanics.

The complete report of Klein and Thomas on "Posture and Physical Fitness" is given. The report is a study, scientifically planned and carried out, of the effect of group training of 1708 children in posture in an elementary school in Chelsea, Massachusetts, 1923-1924. The important outcomes of the study are: (1) the elementary school age, or earlier, is the logical time for specific posture training, both for prevention and correction; (2) excellent results may be obtained by the classroom teacher; (3) some of the points necessary for carrying out a successful program are: interest and training of teachers; orthopedic surgeons available for consultant services and for examination; direction of the work by a trained supervisor.

Practical helps and suggestions are included in a section of the course of study from the Boston public schools. The course contains a compilation from various sources of valuable corrective exercises and games.

Excellent reference material, technical articles and books on the principles of body mechanics, is given.

The personnel of the committee and the association of the report with the White House Conference on Child Health and Protection should make the

publication an effective and authoritative means of improving the educational program throughout the country as it applies to instruction in, and the practical application of, the principles of good body mechanics.

Teachers and students of physical education will find in the book stimulating and helpful material. As the responsibility for the organization of a corrective program to improve body mechanics rests with administrators, the report contains a significant message for superintendents, principals, and directors of health and physical education departments.

Claire Colestock,  
Assistant Director Physical  
Education, Pasadena City  
Schools.

**SAFETY AND HEALTH IN ORGANIZED CAMPS.** J. Edward Sanders, Ph.D. National Bureau of Casualty and Surety Underwriters Educational Series. Vol. III, 133 pp.

This book is a unique contribution to the field of safety. Statistically it is scientific and reliable. It has grown out of camping organizations themselves. Camps and camping organizations have co-operated in furnishing detailed data as to ways and means of improving health and safety conditions. The seriousness of this problem is readily seen when it is noted that in 1900 there were but 22 camps in existence whereas there were in 1930, 7,367 with an attendance of 1,062,500.

Four distinct steps have been followed in preparing this book: 1. the desired information was determined upon; 2. representative camps were selected for study; 3. analyses of prevailing conditions were made; 4. a code was formulated from the findings.

The data was drawn first from 114 camps in 1929. These camps represented a total enrollment of 30,000 individuals. In 1930, 503 camps were analyzed representing an enrollment of 129,000 individuals. Of these, 60

camps were visited personally. Detailed accident, injury, and health blanks were used upon which to record the data immediately applicable to the accident or health status, such as the results, cause, history, camp management, aquatic program, activity program, food and water supply, sanitation, etc.

The 1929 data were then tested against those of the 1930, accidents and injuries being treated as separate entities.

The book is replete with detailed tables of accidents, injuries, frequency rates between campers and staff members, comparisons between boys and girls, occupations when injured, accident preventives, illnesses, health factors, etc., etc. From these tables it has been deduced that three factors are contributory in the determination of accident frequency and seriousness—sex, occupation, and type of camp—and that there are three major problems in camp safety: 1. physical conditions; 2. education of the campers; 3. a safety program.

Analytical studies are made of the control of illnesses in camp, control of contagious disease, and the building of physical vitality, (sleep, nutrition, exercise) with attendant summaries and an analysis of preventive measures. These studies, one of 1929 and one of 1930, are compared and conclusions reached as follows: 1. "Merely living in a rural environment does not of itself guarantee health"; 2. camps vary greatly as to health conditions; 3. "The excellent health conditions in some camps give any needed proof that life in camp may be exceedingly beneficial to campers."

Chapter VIII gives a "general summary of problems and possible remedial measures." This chapter alone should make the book indispensable to anyone even remotely connected with private or public camps.

V. S. Blanchard,  
Director, Health Education,  
Detroit Public Schools.